bulbous artery was divided, and threw strong jets of blood, but was restrained, by an assistant holding his finger on it for a few minutes. Forceps of a common size were easily introduced, and placed on the stone, which proved to be very large, and after several attempts to bring it through the incision without success, I withdrew the forceps, examined with my finger, and ascertained that the stone was spherical, and could not be brought out whole with safety to the patient. I crushed it, and brought out with the forceps a large piece; introduced the forceps several times, and brought out large fragments; after this, washed out many with the syringe, and removed others with the scoop. Finding that the scoop still touched stone near the fundus of the bladder, and fastening on some that could not be brought down, and when I attempted it, gave great pain to the patient; I again sounded with my finger, and was astonished to find the mucous membrane of the bladder, near its fundus, coated with a calculous incrustation of considerable thickness and hardness, but easily broken by pressing my finger against it. There appeared also to be an hour-glass contraction of the bladder, the lower portion had been occupied by the stone removed; the upper portion yet contained a thin stratum of calculous concretion, spread over the surface of the bladder, and firmly adherent to it. As the patient had been on his seat about forty minutes, and had suffered considerably from the last attempt to clear the upper portion of the bladder, I put him in bed to wait the result of further treatment; gave him sixty drops of laudanum, directed warm fomentations over the pubis, if there should be pain or tenderness. Left him 6 o'clock, P. M. 22d July.

23*d*, 9 *o'clock*, *A. M.* Found he had rested well the past night; suffered little pain; urine had passed freely through the incisions; many small pieces of calculi had passed. Pulse 90. Directed mucilages and light food; laudanum if there should be pain; his head and shoulders to be well raised; to rest on his back, with his knees drawn up and spread as much as possible.

24*th*. Found him under slight fever; some pain and tenderness over the region of the bladder. Pulse 95. Coated tongue; bled twelve ounces; gave oil ricini, to be followed after operation with Dover's powder; directed warm fomentations and laudanum as before.

25*th*. The oil had operated; had taken two powders, six grains each, and fifty drops of laudanum. Slept the greatest part of the night; many fragments of calculi had passed off. Pulse 95. Discharge of fetid matter, mixed with urine, through the incision; passed into the bladder a silver probe with a broad flat point; discovered much calculous matter near the fundus of the bladder, and

some loose near the neck. The probe was coloured black by the contents of the bladder. Turned the flat end of the probe in the form of a hook; introduced it several times, and drew out many pieces of calculi; fastened on several pieces high in the bladder, which, on attempting to remove, gave the patient much pain; introduced a female catheter, and injected through it one gill of elm tea. Gave a powder composed opii camph., emet. tartar, and calomel; directed fomentations as before.

26*th.* Several pieces of stone had passed off. Some appeared to be those I had attempted to remove the preceding day with the hook; they were tinged on one side with blood, and covered with a membranous substance; considerable discharge of fœtid matter; directions as the day before.

28*th.* Injected mucilage, passed the hook, and drew out several pieces of calculi; bowels open; had slept well; little fever; disposed to take solid food; less matter and fœter. When his knees were brought together, his urine passed through the urethra, finding there was a large quantity of calculous matter yet remaining, and fearing the incision would close too much for its removal in the manner I had adopted, I procured a silver scoop.

29*th.* Injected and introduced the new instrument into the upper portion of the bladder; on withdrawing it, I found the bowl filled with calculi, and morbid membranous substance. I introduced this instrument again twice, with a similar result, the introduction at first, was rather difficult through the neck of the bladder, and gave the patient some pain.

I visited the patient daily, injected mucilage, and introduced this instrument, two and three times each day, until the 6th of August, and brought off more or less calculous matter each day. At this time a large fragment was brought down to the neck of the bladder, being too broad to pass, I disengaged the scoop, and left it. I procured the forceps, and the next day, with them, broke the calculi in pieces, and removed them with the hook. On passing the probe to the fundus of the bladder, I found many pieces yet remaining; the pain produced was remedied by laudanum, and fomentations, powders of calomel and opium continued.

8*th.* Found the patient had voided several pieces of calculi; was much discouraged; said "*his bladder was a gravel pit,*" and that he *could not be cured;* persuaded him to persevere; introduced the scoop twice, and brought down several large pieces; found the state of the bladder much altered, its contraction on the instrument distinctly

felt, and much less jarring sensation from stone to the instrument, than at any other period.

9*th.* Found several small pieces had passed; introduced the scoop; found but few small pieces which were removed; sounded afterwards with the probe and found none.

10*th.* No calculi had passed, patient expressed great satisfaction; said "*he felt around the bladder as he used to five years before;*" sounded, and found no stone; brought the knees together and confined them.

11*th.* The patient passed part of his urine through the urethra. Symptoms favourable; passed a sound through the urethra into the bladder. Strong contractions of the bladder upon the instrument; from this period the incision closed rapidly; the patient sat in a chair occasionally, took solid food, and recovered his strength daily. On the 20th, the urine was retained five and six hours in the bladder, and passed wholly through the urethra, with all the healthy sensations.

The patient discharged. Saw him on the 20th of October; he had rode on horseback thirty miles the preceding day. Said he was perfectly well.

The whole weight of the calculi taken was five ounces, three ounces by the first operation, and two ounces by subsequent removal; the whole was composed of the phosphate of lime; the portions removed from the coats of the bladder, were about the eighth of an inch thick, (I send you a piece enclosed,) easily broken or crumbled with the finger.

I will not trouble you with many remarks; there is one circumstance worthy of notice in the symptoms attending the case previous to the operation, viz. there never had been the most prominent symptoms of stone till the last weeks of his sufferings. Such as total suppression, and bloody urine, and extreme pain after voiding it. There was probably a morbid state of the mucous coat of the bladder in the first place, which occasioned the calculous formation upon it, agreeable to the opinion of Mr. Brodie, and its action or contractile power was partially suspended. The distinct portion of stone resting near the neck of the bladder formed afterwards.

I am sure the operation of lithotrity would not have succeeded in this case. I attribute my success principally to a very free incision through the external parts, keeping it open, and to the final introduction of the silver scoop. This instrument is well calculated to detach portions of calculi, as well to remove them from the bladder. The bowl part is made deep, and the front edge thin and much turned up in the form of a hook. In common operations for stone of a small size,

or on a young subject, this instrument can be made very useful for extracting.

Gentlemen present at the operations—A. G. De Camp, Surgeon U. S. Army; Ira A. Smith, M. D.; Dr. P. Maxwell, U. S. Army; Richard Clark, M. D.

Watertown, Jefferson Co. State of N. York, Feb. 13th, 1832.

Art. IV. *Case of Hernia with Obstruction, (engouement,) in which there was no Evacuation from the Bowels for Seventeen days.* By John J. Abernethy, M. D. of Harford County.

I WAS called August 3d, 1832, to visit David Crane of East Windsor, twelve miles from this city, with irreducible, obstructed, inguinal hernia.

The patient was eighty-four years of age, of temperate habits, and good constitution. It appeared that he had had hernia for many years; it had caused no inconvenience; he had never worn a truss. The intestine had usually descended a number of times every day, but he never found any difficulty in reducing it until Friday, July 20th, 1832, when, after labouring some time during the afternoon, he found the herniary tumour in the left groin about the size of a goose-egg, stretching down into the scrotum, causing some pain and general uneasiness.

He immediately resorted to the manipulations by which he had always previously succeeded in reducing it, but at this time found the herniary tumour was larger than it had formerly been, and as he continued his efforts at reduction, they caused considerable pain. He now sent for his physician, who administered a tobacco injection, and again had recourse to the taxis, but in vain; he then directed cold and afterwards warm applications to be made to the part.

Sunday 22d. Gave half an ounce of castor oil, which produced nausea, some tumefaction and tension of the abdomen, but no cathartic operation. After the exhibition of the oil he experienced some pain and tenderness in the herniary tumour; all medical treatment was then suspended, and the last mentioned symptoms disappeared. His diet consisted of chicken broth and beef tea, which were also administered from time to time per anum.

I visited him Friday, August 3d; found him tolerably comfortable, in no pain, had no tenderness or particular tension of the abdomen,

yet some fulness of the bowels, having had no evacuation of fæcal matter since the descent of the hernia, July 20th. The hernia could not be reduced at this time; there had been but slight symptoms of inflammation, and none of gangrene. Flatus occasionally passed off from the bowels, and by pressure air could be made to pass out and into the portion of intestine contained in the hernial sac; but the passage of the fæces was entirely interrupted.

I now recommended an immediate operation, which however was not consented to, some of the friends objecting, and the attending physician being absent. Visited the patient again on the afternoon of Sunday, the 5th, when there having been no material alteration in the case, he consented to have it performed.

I was assisted by Dr. E. F. Reed in the operation, which was performed in the usual way. Upon opening the sac, it was found to contain a portion of the colon, which exhibited a healthy appearance; adhesions of considerable firmness had formed between the intestine and the sac: on enlarging the opening at the external ring, and separating the adhesions as far as necessary, the hernia was at once reduced. The incision was brought together by three sutures, straps of adhesive plaster, lint, light compresses, and a T-bandage were applied; the patient put to bed; sixty drops of laudanum were immediately given, and in an hour and a half a pill containing one grain of opium. He bore the operation well, complained of but little pain after it was completed, and passed a comfortable night.

Injections of infus. eupator. perfoliat. mur. soda, and molasses, were directed to be given every three hours during the evening and night. Monday morning 6 o'clock gave half an ounce of castor oil, and about 7, he had a natural and copious evacuation from the bowels; this being the first stool he had had for at least *seventeen days*, afforded him much relief.

I then left him doing well; and have since received the following communication from the physician who attended him, dated East Windsor, Sept. 4th, 1832.

Sir—In regard to the case of Mr. Crane, I have nothing particularly interesting to communicate, except the fact of his recovery without any unfavourable occurrence subsequent to the operation.

He remained very feeble during the first week, sleeping most of the time; the pulse extremely small and frequent; the countenance pale and sunken; the tongue densely coated with fur, and the fauces filled with thrush.

His treatment consisted in giving opium in small doses, every four or six hours. Spirit every hour or half hour, sufficiently freely to keep him warm, as he was much inclined to coldness. A solution of quinine was exhibited in

doses equal to one-third of a grain every two hours. Animal broths, custards, coffee, &c. were given hourly, in such quantities as he could be induced to take them.

Alvine evacuations were produced by enemata about once in three days. About a week after the operation, the tongue became clean, the fauces were relieved of their thrush, his breathing, which had been irregular, and accompanied with much rustling, became natural, and the mind, which had during the first week been almost entirely broken down, seemed to recover its strength in some measure.

The wound, which had exhibited rather a pale aspect, otherwise healthy, now seemed to heal rapidly; this, of course, was treated with simple dressings. After this, his treatment remained essentially the same, except that the tonics, cordials, and nourishment, were given less frequently, and in larger doses. The anodynes were dispensed with, except at night.

On the 22d of August the wound appeared perfectly healed; and on the 28th I saw him walking about his room.

Yours, &c.

A. WATSON.

It is well known that the great danger to be apprehended from the incarceration of a portion of intestine or other internal part, is inflammation and its consequences. The *obstruction* to the fæcal passage is quite a subordinate consideration, excepting as it may increase the inflammation, as is here clearly demonstrated.

Hartford Co. Sept. 21st, 1832.

ART. V. *An Account of the Influenza of* 1831–2, *as it occurred in Burke County, Georgia.* By A. C. BALDWIN, M. D.

THE influenza as it appeared within the sphere of my practice, during the winter of 1831–2, and in the spring ensuing, presented a variety of symptoms, in different persons. This difference may have arisen, and probably did arise from the unsettled state of the weather during the time of its prevalence. No winter within my remembrance was more severe, nor do I recollect to have witnessed a spring more remarkable for the great and sudden changes of temperature. Hot, cold, and temperate weather, succeeded each other in such quick succession, that it was almost impossible to conjecture from to day what would be the state of the weather on the morrow. Nor were the changes of temperature alone remarkable. A clear, pleasant, and promising morning was frequently followed by a cold, wet, disagreeable evening. These sudden changes, as might have been expected,

were productive of much indisposition among the inhabitants of this section of country, and the diseases which prevailed, were generally inflammatory. Bilious pneumonia was of common occurrence, as were diseases of the lungs generally. Cases of this character were easily managed, when assistance was called for in time to allow the free use of the lancet, and a recourse to other depleting remedies; but, if neglected at the forming stage, were frequently fatal in their terminations.

The influenza, as it appeared in many cases, was so mild, as to exhibit little more than the common symptoms of catarrh, and required little or no attention. Many affected in this manner, after suffering a temporary inconvenience, recovered in a few days without the use of medicine; while, in others, the disease assumed a more alarming aspect, and called for the most prompt and energetic measures for its subjection. No symptom, with the exception of fever, was universally present. As the disease appeared among the people generally, the following symptoms were observable, although a great majority of them were absent in different cases; coryza; cough; a general soreness over the body; fever, preceded by a chilly sensation; a pulse at first soft and frequent, afterwards hard and full; pain in the head and eyes; shooting pains through different parts of the body; pain in the back of the neck, in the small of the back, and in the chest; tenderness of the epigastrium; sickness at the stomach; occasionally, inflammation and pain of the tonsils, with impeded deglutition; delirium; spasm of the muscles of the legs and arms on attempting to move the body, in those cases in which there was much general soreness; tongue furred, sometimes white, at others of a dark brown colour; offensive breath; and great restlessness.

When a case of any severity was neglected, it developed the following symptoms in its progress; the pain in the head and eyes became intolerable; the face became flushed; the eyes red and had a wild appearance; there was furious delirium; and the patient would frequently scream aloud from the violence of the pain. These symptoms having continued for a day or longer; coma supervened, and the patient would lie quiet in bed, with the head thrown back; the mouth open; the eyes fixed, and the pupils dilated; the tongue dry and dark; with laborious breathing. In this condition he would remain for many hours, the breathing growing more and more laborious until he expired. Life appeared in these cases to be prolonged, and the patient kept up for some time by the excitement of the fever. Death, in all cases, appeared to result from congestion of the brain or of the lungs, and frequently from both.

The fever which attended was remittent, and was preceded by a chill. Some had but one chill, and that at the commencement of the disease; others experienced a chilly sensation before each exacerbation of the fever. The remission took place in the morning and in the evening. Patients were worse during the day. The alleviation which was experienced at night, I attributed to the effect of depleting remedies administered during the day.

Generally speaking, the disease if properly managed was not dangerous; and being inflammatory in its character, the indications to be fulfilled were obvious to the most careless observer. But when neglected, or when a temporizing plan was depended on, the effects on the brain or on the lungs, rendered the result doubtful; and frequently was followed by a fatal termination! At the commencement of an attack, there was no criterion by which we could judge with certainty, what organ would suffer most during the progress of the disease. An organ, apparently not implicated at the forming stage, occasionally became the chief seat of the disease, as was exemplified in the following case, in which the lungs suffered severely from inflammation. A lady in fine health, was suddenly attacked during the prevalence of the epidemic, with a violent pain in the head, succeeded by fever and a distressingly sick stomach. No other disagreeable symptom was present. The pulse was soft and frequent. To alleviate the pain in the head, venesection was immediately resorted to, and an emetic of ipecac. and tartarized antimony was administered to relieve the stomach. Temporary benefit followed the plan pursued; but as the affection developed itself, other symptoms were observed to make their appearance, showing that the brain and stomach were not solely the parts implicated in the morbid derangement. A stoppage of the nose, accompanied with a distressing cough, were the succeeding symptoms, and the cough continued more or less during the continuance of the disease. The symptoms which occurred afterwards were those pointing out an inflammation of the lungs, and the chest formed the chief seat of suffering. A pain in the side, augmented by coughing, and attended with pains in the back, and in the back of the neck; a high fever; a furred tongue; the face at times flushed and at times purple; and a copious expectoration, the matter spit up at first of a whitish colour, and afterwards yellowish or of a dark brown, were the attendant symptoms. This case was successfully managed by the repeated use of the lancet; by blistering the chest; keeping the bowels in a soluble state by the administration of aperients; and by drinking plentifully of mucilaginous drinks.

Four cases came under my observation which commenced suddenly

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with a pain in the foot, three of which recovered, and the fourth terminated fatally. The fatal case was one of considerable violence from its commencement, and as it did not submit to the plan of treatment which had proved successful repeatedly in other cases similar in character, it may not be improper to give an account of the appearances which it presented during its progress, and of the plan of treatment which was resorted to in my attempts to subdue it. The patient was attacked suddenly whilst engaged in his ordinary business, with a violent pain in the foot. This after a few hours disappeared, or rather seemed to have passed into his leg. From thence he discovered it had passed into his back. After this he had shooting pains through different parts of his body, till at length he experienced a violent pain in the head. At this time I was called to see him, and learned the particulars of his case as stated above. The pain in his head was seated over the left eye, and extended to the frontal sinuses, and together with a pain in the eyes, at this time constituted his chief suffering. He had a high fever. His veins were very much distended, and his pulse was remarkably full and hard. His indisposition was of several days standing before I was called on to prescribe. The first remedy resorted to was the lancet; he was bled almost to fainting, and was directed a saline cathartic. On the morning following, he informed me that his medicine had purged freely, and that he felt some little relief, although the pain in the head was very distressing. His pulse was still full and hard, and his fever was but little diminished. A second bleeding was determined on, and as much blood was taken from the arm as had been on the day preceding. The purging was directed to be continued, and cold applications were ordered to be kept to the head, and hot bricks to the feet. During the evening of the same day; I was again called to visit my patient, and on my arrival learned that his nose had been bleeding, and that the pain in the head and eyes was greatly augmented. His pulse being still hard and full, and he still had a high fever, I determined to try once more the effects of the lancet; and to make as powerful an impression as possible on the circulation, opened a vein, making a large orifice. As the blood was flowing, I kept my finger upon the pulse, and discovered after a short time that it sunk rapidly. About twelve or fifteen ounces of blood was lost at this last bleeding, and although the patient was faint and relaxed from its influence, no alleviation of the pain could be discovered. The pulse was controlled, but the disease remained unchanged. In a short time the pulse became nearly as full and hard as it had been before the bleeding; but, as the abstraction of blood did not appear to be followed by any improvement,

I determined to lay aside my lancet, and to trust the case to moderate purging, blistering the back of the neck, cold applications to the head, and hot bricks to the feet. Added to the remedies already enumerated, I opened the temporal artery; but it did not bleed much, nor was the bleeding followed by any improvement. Not to be tedious, it may be stated that the medicines administered to operate on the bowels acted well, and that the blister drew very well; but that no relief was experienced; the disease continuing to progress for the worse. On the day following the patient became delirious, and could not be kept in bed. For about eight hours he continued struggling to escape from his friends who were endeavouring to prevent him from leaving the house, and at the end of that time he was almost exhausted, becoming in a short time comatose. In this condition he lay for about twelve hours, in a high fever, attended with laborious breathing, and then expired, apparently from congestion of the brain. For some hours before death, he never moved his left arm or leg, although he frequently moved the arm and leg of the other side. The death of this patient I attribute to neglect. Had assistance been called for a few days earlier, and the same plan which was pursued afterwards, been put in force, there is but little doubt, judging from its success in other cases of a similar character, that the result would have been different. But as it had been delayed to so late a period, the brain became too much implicated in the disease, to be relieved by the depletion instituted in the case; and it would have been unsafe, and possibly fatal to have pushed it to a greater extent.

Having entered so minutely in the treatment of the influenza, as it appeared in the two cases cited above, it is scarcely necessary to say more on the subject. A general summary, however, may not be improper. At the commencement, if the case was at all violent, bleeding was my chief dependence, and in no case did I ever repent its employment. Frequently have I regretted by inability to resort to it, or of using it with too sparing a hand. Purging actively after bleeding, and keeping the bowels in a soluble state subsequently, was my practice in the management of all cases. For this purpose calomel, oil, or salts, were the medicines employed. Mucilaginous drinks, or expectorant syrups were administered in those cases in which the cough was troublesome. After free depletion, blisters were occasionally used. Opium was always objectionable, and if given in the early stages of the disease, was always more or less injurious. After free evacuations, its employment to relieve particular symptoms, or to procure sleep was allowable.

St. Clair, Burke County, Georgia, May, 1832.

ART. VI. *A Case of Spinal Irritation.* By ROBERT J. TURNBULL, M. D. of Charleston, S. C.

WE know of no one medical fact, of recent observation, which has illustrated the nature of so many diseases, and those too of an anomalous and obscure character as the above condition of the spinal cord. When reflecting upon those maladies which have been classed under the vague and indefinite appellation of *nervous* or *functional* diseases, may we not indulge a rational hope, that the limits of these classes are about to be narrowed down to the smallest compass, and that our *divine art* is about to be rid of terms, which are but so many evidences of our ignorance of the seat of disease? and may we not also augur the happiest results from the work already begun? We find ourselves no longer satisfied with the vague illustration of angina pectoris, as a *functional* disease, or hysteria, as dependent upon a *general derangement* of the nervous system. This "*airy nothing*" has at length received "a local habitation and a name." As there may yet exist some, who are ignorant of the existence of this affection of the spine, and consequently of the rational interpretation of those phenomena which declare its existence; as also those who, though not ignorant of such a morbid condition of the spinal cord, yet do not acknowledge the symptoms which have been deemed indicative of its existence, as referable to such a condition of the spine, we cannot but flatter ourselves that a case, so marked as that which we are about to record, will prove highly satisfactory, both as to the existence of such a disease—the propriety of addressing our therapeutical agents to the spinal column alone—and also of their prompt remedial agency when thus applied.

In the month of August, 1831, I was requested to visit Harriet B. aged nineteen years, milliner by occupation, who had just returned from the country where intermittent fever prevailed. I found her with all the symptoms of an intermittent in its second stage; but upon inquiry, I learned that there had preceded no marked chill. For want of better information as to the history of the case, and particularly as the physician in the country had pronounced the similar attacks which she had experienced, of the character of intermittent fever, I treated her present disease as such; and convalescence was the result. I now learned that she had been frequently subject to this fever, about the catamenial period, which fact, taken in connexion with that already mentioned, viz. that there had preceded no marked chill, at once gave me an insight into the nature of her com-

plaint. I now naturally interpreted the fever, as an effort of the system to bring about this secretion; and again upon inquiry, I learned that the irruption of the menstrual secretion was synchronous with the subsidence of the febrile symptoms. Upon inquiry as to the quantity and performance of this function, I was furnished with all the symptoms of dysmenorrhœa and menorrhagia; and I was also informed that they had long existed.

Being temporarily relieved of the uterine complaint, I was now consulted, as to certain anomalous symptoms, which had existed for *five years*, and had baffled the skill of many physicians, and some of them, our most eminent. These symptoms were *pain in the right hypochondriac region*, pain in the *right shoulder*, pain *shooting up the neck* and back part of the head, also a *hacking dry cough*, which were all aggravated towards evening, continued throughout the night, and depriving of all sleep, until towards morning, when there usually occurred a mitigation of the symptoms. These pains were represented as excruciating, and my patient expressed herself willing to submit to any treatment, however tedious, which would promise hopes, even of partial relief—the idea of total relief was too delightful to anticipate. From these symptoms I very naturally thought, that I had to encounter a chronic hepatitis, associated with a general derangement of the chylopoïetic viscera; and to which general derangement, I was disposed to attribute the derangement of the functions of the uterus. To remedy the first, all the usual articles of the materia medica were put in requisition, both locally and constitutionally. To induce a healthy condition of the uterine functions, such advice was given, as tended to improve the general health, but without the slightest relief.

The reflexion which the above failure induced, led me to refer the complaint to the class neuralgia, as had been recently illustrated by Teale and others; with these, I now began to suspect that the cause of the disease was to be sought for at the origin of the nerves affected. Pressure was accordingly made upon the spinous processes of the vertebræ, throughout the whole column, and the result was pain, about from the second to the sixth cervical; about the fourth or fifth dorsal, and again about the last dorsal, or first lumbar vertebræ. This examination satisfied me as to the spinal origin of the disease, and upon a more minute inquiry as to the nature of the pains, I was informed that the pain in the head was *superficial*, and *ramified* over the occiput and under the scalp; that the pain in the shoulder was that of "a knife piercing the part;" that the pain in the side was in the *course of the rib*, which was evinced by laying the index finger

parallel to that bone, when asked as to the kind of pain which she experienced. She had some months experienced much pain in the lumbar region, and upon inquiry, she informed me, that at that time she had experienced numbness in the lower extremities; and that for a few days back, she had experienced a *weakness* in her *right* arm. These symptoms determined me as to the treatment which ought to be pursued, and I accordingly applied three moderate-sized blisters over the spots tender upon pressure. Great constitutional irritation supervened, with an aggravation of all the local pains, particularly that of the right shoulder; but the catamenia making their appearance at this time, I was at a loss to determine, whether the aggravation of the symptoms was attributable to the action of the blisters upon a peculiarly sensitive skin, or whether referable to the disturbed condition of the circulation, dependent upon the menstrual effort. Accompanying this condition of the system, there was involuntary *twitching* of the body, but *chiefly* of the *right arm.* All these aggravated symptoms subsided with the eruption of the catamenia, and the abstraction of the blisters. The treatment was now omitted for a week or ten days.

Upon again visiting my patient, I found that the disease had progressed, and a few days after, the *weakness* of the arm was so great, as to preclude its use, even at her meals. When the hands were put into cold water, pains darted up the arm. I now determined to treat the case, *de novo*, as spinal irritation; and I commenced with a liniment composed of equal parts of olive oil and spirit of turpentine, which was afterwards increased to three parts turpentine, and finally to four parts turpentine to one of oil. This liniment was used three and four times a day, with marked benefit. A mitigation of the pains followed its use, and the arm was so much strengthened, that upon one of my visits, I found her using it *violently* in drying a large tea-board. I now began to entertain hopes of a cure, to accomplish which, I began with the more stimulating application of *tartar emetic ointment*, which was used with progressive benefit, until, contrary to my directions, the remedy was pushed too far; and great constitutional irritation was again set up, aggravating all the symptoms, and accompanied with the involuntary *twitchings* of the body and *right arm.* These subsided with the subsidence of the pustular inflammation; and a more moderate use of the ointment continued to mitigate her sufferings, and eventually relieved all those symptoms which had existed for more than five years without intermission. She now tells me "that all her pains are gone, and she cannot express how much better she feels."

Though relieved of the symptoms dependent upon the irritation existing in the spinal cord, the dysmenorrhœa and redundancy of the catamenia were not materially affected; in connexion with which, however, it ought to be remarked, that the lumbar portion of the spine, tender upon pressure, was much neglected in the treatment, owing to the inconvenience of making the application. She never observed the horizontal position. This, we believe, unnecessary, when the disease exists in the cervical or dorsal vertebræ. In the lumbar vertebræ, however, owing to the superincumbent weight, as also to the greater latitude of motion, the recumbent posture, no doubt, will be productive of great benefit. In making our applications to the spine, care should be taken, lest we produce a too general and intense an inflammation in the vicinity of the original affection, which will not fail to extend itself to the subjacent spinal cord, and thus augment that irritation which it was our design to remove. We cannot take leave of this case, without making some reference to the connexion and dependence of the symptoms upon the morbid condition of the spinal cord. These, we have already said, were pain in the back part of the head, ramifying over the occipital portion of the occipito-frontalis muscle—pain shooting up the neck—pain in the shoulder, in the hypochondriac region, and in the course of the rib; also a troublesome dry cough. Let us now connect these symptoms, with the origin and distribution of the nerves arising from the diseased portions of the spinal cord.

The sub-occipital or tenth pair of nerves, arises from the medulla spinalis, between the occiput and first vertebræ of the neck, and divides into two branches; the posterior gives nerves to the deep-seated, small muscles arising from the first and second vertebræ and the occiput, as also to the *complexus* and *splenius* muscles, on which we must locate the darting pains in the neck. The second cervical, issuing from between the first and second vertebræ of the neck, divides into two branches, the superior inosculates with the sub-occipital nerve; the posterior branch likewise supplies the *complexus* and *splenius* muscles, and communicates with the first cervical; its branches also extend "over the occiput, even to the summit of the head." The fourth cervical divides into two branches; the first goes to form, with the third and fifth cervical nerves, the *phrenic nerve*, and sends also a branch to the sympathetic, to the *integuments* of the *neck* and *shoulder*, and to the *supra* and *infra-spinatus muscles;* the posterior division of this nerve passes to the muscles of the spine and shoulders. This distribution of nerves arising from the diseased portions of the spinal cord, as evinced by the pressure made, will fully elucidate the pains

in the neck and shoulders. The origin of the phrenic nerve, from the third, fourth, and fifth cervical nerves, the two first vertebræ of which were tender upon pressure, will account for the convulsive action of the diaphragm, giving rise to the "*dry, hacking cough.*" It becomes us however to say, that this cough yielded to antimonials, and that too, before any application was made to the diseased spine. The axillary plexus is formed by the fifth, sixth, seventh, eight, and first dorsal nerves. The nerves of the arm being derived directly from this plexus, whose origin we have seen, was diseased, as evinced by the pressure made upon the fourth and sixth vertebræ, will afford us an explanation of the pain in the arm and its subsequent weakness—I might say paralysis. It remains but to account for the pain in the *course of the rib;* the reader will, no doubt, anticipate us in saying, that we refer this to the intercostal nerve, coming from between the fourth and fifth dorsal vertebræ, which, it will be recollected, were tender upon pressure.

We now take leave of this case, hoping that its recital may prove as instructive to others, as it has been to ourselves—that it will be recollected for the future, that pain in the right hypochondriac region, accompanied with pain in the shoulder, is not a diagnostic of the existence of hepatitis; and that, under these circumstances, the patient ought to be examined as to the existence of the above condition of the spinal cord.

New York, 1832.

ART. VII. *Case of Premature Puberty.* By J. LE BEAU, M. D. of New Orleans. (Communicated in a letter to Dr. DEWEES.)

I TAKE the liberty to acquaint you with an extraordinary case of prematurity in a child, which fell under my observation in this city. Matilda H. was born of a white family in low circumstances, the 31st of September, 1827. She came into this world with her *mammæ* perfectly formed, and the *mons veneris* covered with hair, as much as a girl between thirteen and fourteen years old; when precisely three years of age the *menses* made their appearance, and have continued to reäppear regularly every month until the present time, and as copious as any woman might have them—each period lasting four days. She is now four years and five months old; she measures forty-two inches and a half in height, French measure; her features are re-

gular; she has a rosy complexion; her hair chesnut colour; her eyes bluish-gray; she is what may be called handsome; the conformation of her body is very strong; her *mammæ* are now of the size of a full-grown orange, and the dimensions of the *pelvis* are, in my opinion, such as to enable her to bear children when eight years old, and very likely sooner. She constantly enjoys good health.

With sentiments of the greatest consideration, I have the honour to be, Sir, your most obedient and respectful servant,

J. LE BEAU, M. D.

New Orleans, May 31st, 1832.

We, the undersigned, physicians practising in the city of New Orleans, State of Louisiana, do certify that at the request of our brother, Dr. Le Beau, we called at the dwelling of the parents of Matilda H., where, after having attentively and minutely examined the said Matilda H., confirm all that is above expressed. In truth whereof, we have signed the present certificate.

FORMENTO, M. D.
DAVID C. KER, M. D.
JOHN LABATUT, M. D.
DASIT SENAC, M. D.

New Orleans, the 4th of June, 1832.

State of Louisiana.—Mayorality of New Orleans.

I, Denis Prieur, Mayor of the City of New Orleans, do hereby certify that the foregoing signatures are those of Messrs. J. Le Beau, Formento, D. C. Ker, J. Labatut and Dasit Senac, practising physicians of said city, and that full faith and credit is due to them as such.

In witness whereof, I have hereunto set my hand and affixed the seal of the Mayorality of said city, this eighteenth day of July in the year 1832.

D. PRIEUR, *Mayor.*

ART. VIII. *Cases Illustrative of the Application of Physiological Medicine to the Diseases of Louisiana, with Remarks.* By EDWARD H. BARTON, M. D. of St. Francisville, Louisiana.

THE following cases are offered as illustrative of the application of the physiological doctrine to the treatment of the diseases of the south. It is hoped, that thirteen years extensive practice in one of our sickliest regions, will be admitted as furnishing some claims to be heard, and render it unnecessary to offer any apology for presenting to my brethren the results of my experience.

I have deemed it best, not to encumber these cases with too many details, and have therefore confined myself to a general description of the case, with a succinct view of the treatment, and such remarks and inferences as the case seemed naturally to suggest.

Case I.—*July*, 1829. D. aged forty, full habit of body, sanguine temperament, unaccustomed to the climate, was taken with a severe chill after being exposed to a rain on the 13th, which lasted upwards of twelve hours. Saw him in the forming stage of the fever, when he had soft, contracted pulse; violent vomiting, with discharge of much bile; great tenderness of abdomen; tongue red on edges, and furred in middle; hot, dry skin. Applied six cups to epigastrium, which at once suppressed the vomiting, relieved the cold chills still existing, and produced perspiration. Ordered mucilaginous drinks, and fomentations of the same to the abdomen. Saw him again in four hours. Had had no vomiting since cupped, though it had previously been incessant; fever much less; fine perspiration followed the cups; pulse full and developed. He had however pain in the head, and I therefore bled him twelve ounces, with relief. Ordered Seidlitz powder, and continue mucilaginous drinks and fomentations; fever soon subsided.

14*th*. Much better; no return of fever; continue treatment.

15*th*. Feels very well; discharged.

Remarks.—This is an ordinary case of bilious fever, severe in its incipient stage, and portending a violent attack, but cut short at once by the local depletion, applied as near as possible to the irritated organs; which arrested the disease in its first seat, and cut short the sympathizing consequences. The gall-bladder in this case had either, from the violent efforts of vomiting, thrown out its contents, or the liver itself had associated its action with the irritated stomach, and increased functional action had been the consequence. In either event, the local depletion had arrested it, either in the first seat, or the second. Though the ordinary course by an emetic, cathartic or calomel might have relieved in this case, by acting upon the secretions; yet the course of relief by revulsive secretion, still leaves the stomach, the receiving organ of the remedy, as well as the seat of the disease, in a state of irritation; and hence much more liable to repetitions of the paroxysm, which, in this case, was prevented by the total removal of the primary diseased impression, and the case cut short. The local capillary bleeding has all the advantage of the revulsion and depletion, and leaving still the important organ, the stomach, unembarrassed, and perfectly free to exercise all its reäctive powers. Similar cases could be multiplied, were it necessary.

Case II.—*June*, 1829. B. aged forty-eight, of a full sanguineous habit, dark complexion, had been taken with quotidian fever on the 16th, and had taken a cathartic of Lee's pills. I was called on the 18th, and found the patient in a chill, with pain in epigastrium, and in head, back, and limbs; glassy eyes; applied six cups to epigastrium—relieved chill almost immediately in the cold extremities. Fever afterwards lighter than usual. Advised mucilaginous drinks.

19*th*. Much better; ordered oil; chill much lighter; three cups to epigastrium soon relieved it; fever light.

20*th*. Fever very light. Drinks continued,

21*st*. Discharged.

Remarks.—This is also a very ordinary case, recorded to show the influence of local detractions of blood in the forming stage of fever—the chill.

Case III.—*July* 28*th*, 1831. D. aged forty-two, of New Orleans, taken with malaise; chilliness; vomiting; severe pain in back, head, and limbs; great tenderness of epigastrium; glassy, muddy eyes; white, dry, fleshy tongue; high fever; pulse small and quick; and thirst. Cupped the epigastrium very freely, to open pulse and relieve general symptoms; then bled, and afterwards gave demulcents, and resorted to fomentations and enemata, with great relief.

Second day gave twenty grains of calomel at the solicitation of a professional friend; it purged him severely, occasioned jelly stools, prostrated him much, and produced cold extremities. There now ensued a violent double tertian, with a severe cold stage, with the additional alarming symptom, of the greatest difficulty in breathing and deep sighing; a large cupping, (ten cups,) to the epigastrium relieved these with surprising quickness, and with the sinapisms brought on the second stage. The paroxysms continued to return for several days with great violence, even after full restoration of healthy action in bowels and liver, indicated by perfectly healthy, full-formed evacuations, but were finally subdued by the free use of local bleeding. Solution of quinine was given after healthy secretion from bowels, liver, and skin, were restored, but to the aggravation of the case. The solution of arsenic, snake-root, and diaphoretics, had no effect in arresting the disease. Finally, local bleeding from epigastrium was resorted to again, and then the quinine answered.

Remarks.—The above case is given to show the influence of capillary bleeding from the epigastrium in one of our lightest grades of fever, with a strong tendency to form the algid fever, (cold plague,) of the country. One or two more cathartics, or doses of calomel,

would have accomplished it fully, by increasing the original irritation not relieved by revulsive *secretion.* Such then, though not fully formed, was the prototype of the great bug-bear of the country—the "cold plague," in *nine cases out of ten a factitious disease!* The prompt local bleeding arrested the inflammatory congestion, upon which the difficulty of breathing and cold extremities depended; the other radiated irritations stopt it in its forming stage; and the termination of the case would probably have been much more rapid, but for the administration of the calomel. I have never seen alarming and violent symptoms relieved sooner than the gasping for breath, the vomiting, cold extremities, and hot glassy eyes were, by the cupping in this case.

Case IV.—*September*, 1831. E. aged thirty-eight, of a delicate sanguine temperament, had been attacked with double tertian on the 3d inst. and taken the ordinary domestic remedies, calomel, oil, salts, &c. I was called to him on the 7th, and found him with high fever; delirium; great jactitation; pulse small and weak; yellowish, watery purging; great tenderness and tension of epigastrium; dryness of mouth and skin. Applied six cups to epigastrium; cold applications to head and abdomen after cups taken off; mucilaginous drinks and cooling injections. Called in two hours; delirium relieved; fever and thirst much less; perspiration. Continue treatment; and gave spt. nit. dulc. to continue the mild revulsive action on the skin.

8*th.* Much better; fever milder; treatment continued; ordered oil.

9*th.* Severe paroxysm, with delirium and cold extremities, which soon yielded to cups to epigastrium; tongue better.

10*th.* Ordered blisters to ankles, as a permanent revulsive to prevent by their absorbing influence the formation of a paroxysm; they acted freely also on the skin; no fever.

11*th.* Severe paroxysm; delirium; cold extremities; great restlessness; blisters dry; applied twenty leeches to epigastrium, and six to temples; cooling injections; cold to head; great and speedy relief from the leeches and restoration to consciousness; ordered blue pill, to act upon the secretions, every six hours.

12*th.* Continue pills and mucilaginous drinks; bowels open; but stools thin; no fever.

13*th.* Paroxysm severe; extremities cold; delirium, though its return was procrastinated several hours and thought he had escaped; epigastrium of a *bladdery* feel; applied twenty leeches to it, and six to temples; hot fomentations and frictions to extremities; in a few

hours, that is as soon as leeches fairly removed and bleeding over, consciousness returned. Pills stopped; and from this time there was no return of paroxysm, and convalescence was established.

Remarks.—The double tertian is the most ordinary fever in this climate—the alternate paroxysms being much milder. To arrest the disease it is not sufficient to break one link in the chain—it is then only converted into the simple tertian, with great liability to relapse into the double type. This was a case in which the symptoms were very severe and violent, occurring at the worst season of the year; and long before medical aid was called, as is usual, the common domestic remedies had done all to irritate, but nothing to relieve, by their secretory depletion. It exhibits in a remarkable manner the great power of local bleeding over, not only the cold symptoms, but the great tenderness and tension of epigastrium, the delirium and fever. The tension alluded to above, as distinct from tenderness and pain, is one almost always calling for local detraction of blood. I have seen the most marked influence from it recur in cases the most desperate and protracted; one of which is noted in Case VI. Small as was the quantity of mercury exhibited in this case, about ten blue pills in about a week, yet ulceration of the gums was the consequence and ptyalism; these were not perceptible during the paroxysm, but in the interval were troublesome. This fact sufficiently proves it could have had no influence in arresting the disease.

Case V.—*July*, 1831. M. aged thirty-five, of a sanguine temperament, taken with double tertian remittent on 3d, had been complaining of functional derangement of stomach and bowels for a month or two, and had repeatedly taken cathartic medicines and particularly calomel. Called on 5th, and found him with high fever; pain in head; frequent loose, yellow, watery stools; which continued to disturb him for about a week; tongue whitish; epigastrium tense and tender; some enlargement of spleen; pulse in paroxysm 130 to 140; in remission 100 to 120. Bled; cupped twice; gave light diaphoretics; emollient fomentations to abdomen, and injections; demulcent drinks; after a few days, free use of pil. hydrargyri every four hours. The disease continued until the 12th, notwithstanding the local and general depletion, light evacuants, enemata, &c., and though the gums and mucous membrane of mouth were somewhat swelled, sore, and some salivation. The fever continued to return with somewhat less violence to be sure; but pulse never under 100; diarrhœa but little amended; prostration of the forces considerable; tongue the same, and epigastrium tense.

It now became evident that the medicines that had been administered pretty constantly to act upon the secretions had failed; that if they had not increased the previous irritation brought on by a long course of irritating medicaments, acting upon an increased excitability, it was because they were accompanied with local bleedings, demulcents, fomentations, &c. A free ptyalism had no influence whatever in arresting the march of the disease; in fact, it was now evident there was too much and too deeply radicated a gastro-intestinal irritation to permit or effect secretion, and it was equally apparent that this impediment must be removed, or the patient must soon succumb; we had little to expect from secretory action alone in the crippled state of the forces; the local lesion must be awakened or eradicated, or the case was desperate. Nervous prostration was now too great to bear the cups, and twenty leeches were applied to the epigastrium, (on 12th,) with marked benefit; less fever and general irritation; slept better; secretions from liver and intestines darker coloured and more consistent. Pills omitted; continued other treatment.

13*th.* Applied twenty-five leeches to abdomen; the influence now was still more marked; pulse reduced below 90; febrile heat and irritation almost gone; stools thick and dark-coloured; abdomen become soft and pliable; tongue much better; skin soft and moist; countenance clear; but little further paroxysmal tendency; the pulse however kept up to from 90 to 100 about midday.

17*th.* Believing now that as the secretions were all restored, eyes bright, clear and natural, strength improving, appetite returning, and every other appearance of convalescence, that the pulse was kept up from cardiac irritation, which at first sympathetic, had become independent from continued irritation, a decoction of digitalis was administered; this had the effect in a day or two of lessening the irritation, and restoring the circulation to its accustomed slowness and impulse, and there was no further impediment to restoration.

Remarks.—This is a valuable case: cathartics, and especially calomel, had been pretty freely tried in it before medical advice was sought, with the effect of increasing the intestinal irritation, and producing free evacuations from the bowels, not only without abating, but really aggravating the fever; and it is probable that the indulgence in them may have been the first cause of its production—a popular prejudice existing, that if "the bowels are kept open, and *bile* prevented *accumulating*," no fever can ensue, and they are looked upon simply as cause and effect: a rapid increase of all the symptoms induced him to call in medical aid; general bleeding was

carried as far as the pulse and symptoms of prostration rendered it prudent and safe; local bleeding ameliorated the paroxysms, and it was supposed that giving such medicines as act on the secretions would equalize excitement, and enable the recuperative powers of the economy to produce restorative reäction; it became evident, however, that the irritation had became too deeply radicated from the frequent repetition of the cathartics—the calomel particularly, producing most probably ulceration of the bowels—and hence then the final resort to local bleeding again; this brought it within the sphere of a safe secretory or reäctive influence, and there was now no difficulty in establishing secretion and restoring harmony.

The cardiac irritation being evidently functional and insulated, was soon subdued; similar irritations of the heart from long-continued fever, are by no means unusual; they soon yield to remedies acting upon its organic sensibility; to call it fever, and to treat it, by cathartics, diaphoretics, &c. is hazardous in the extreme; the gastro-enteric surface is not in a situation, from its crippled condition, to revulse upon, and the irritation and debility is usually increased by it, and the danger of the case aggravated.

This case, and many similar might be presented from my case-book, is full of instruction; secretion can only take place at a certain point—minus or plus that point, and none ensues; no variation or grade of cathartic treatment ensures this point; depletion then must ensue from some emunctory to produce it, and there is none so safe or so much in our power as that from the surface of the skin.

Case VI.—*July*, 1829. R. aged twenty-five, of a sanguine, nervous temperament, had been sick some weeks of intermittent fever, and for the last ten days, after repeated relapses with remittent fever; had been treated by calomel and purgatives, and the whole routine of domestic treatment, with a *perseverance worthy of success, and with a violence that did all it could to enforce it!* Finding it all useless, medical aid was sought.

I found him with hot and dry skin, except extremities, which were cold; coma, stupor of two days continuance; subsultus tendinum; tongue red and dry; fuliginous teeth; abdomen meteorized, and excessively tender; frequent watery, yellowish stools; colour of skin, bluish-green, which closely adhered to the muscles, and great emaciation. I applied eight cups to epigastrium, and blisters to extremities; warm mucilaginous fomentations to abdomen; mucilaginous drinks, which, in eight hours, restored him to his recollection,

and in a great measure equalized the circulation. On the ensuing day the cups were repeated. As there was still some stupor, and dryness of tongue, and diarrhœa, I ordered mucilaginous injections, and dressed the blistered surfaces with acetate of morphia in oil; he had now a good night's rest, and felt much better. The third morning the abdomen was much softer and no tenderness; the skin was becoming moist; the watery stools arrested; tongue moist. Continued drinks, fomentations, &c. adding a thin potation of arrow-root every two hours, and dressed blistered surfaces with quinine. He now gradually mended, the appetite returned in a few days, and no further difficulty was experienced but to restrain it.

Remarks.—Here then is a case of protracted *factitious* typhoid fever, so often made by treatment as much so as *bilious* symptoms in ordinary fevers—with radiation of gastro-enteritis to the encephalon—with the most desperate prostration and debility, which the ordinary treatment was rapidly carrying down that great road where such cases *usually terminate!* Could any thing be expected from cathartics, emetics and calomel in this case? From the intenseness of the gastro-enteritic irritation no impression that was remedial could be expected from that surface; could it be supposed that they could relieve that condition of the stomach and intestines upon which indubitably all these phenomena depended, and from which they originated? Had these oppressed, irritated and phlogosed organs the power in their crippled state to call a sympathizing organ to their relief? could it be supposed that in their present weakened condition they could disembarrass themselves by summoning some of their associating organs to their relief? Purge after purge had been tried in vain; calomel's boasted powers has spent its influence like the idle wind—they had only tended to add irritation to irritation; the intestinal exhalents poured forth their fluids without effect; the encephalic irritation expended its sympathizing influence in vain, without removing this deeply radicated inflammation; it was here then that local bleeding put forth its peculiar virtues in removing this ataxic state, by lessening the force of the action at the fons et origo mali, the associating organs were enabled to remove and equalize a less degree of action, and restore harmony.

I will now give a few cases of the yellow fever of 1829. By "yellow fever" is meant an epidemic disease of a malignant nature, and of peculiar type, differing in its symptoms from the ordinary fevers of the locality sufficiently to be easily detected; characterized this season pretty much as usual, by violent pains in the head, back and

limbs; severe and usually burning pain in the epigastrium; dull, red, muddy, idiotic eye, with a sensation with some as if dirt had been thrown into them; great soreness, tenderness and yellowness of surface; red, dry tongue; pulse not often over or as much as 100; usually 80 to 90, and full; coma; stupor; delirium, though in some instances so slight, as to be hardly sensible of it; the patients noticing but little; answering questions intelligibly; and at the period of convalescence, their sickness seeming like a dream to them; bleeding from the gums and nose, and terminating usually between the third and seventh days, though sometimes more protracted, and frequently by black vomit. These, it is to be remarked, rarely ever occurring in any one case, but they were the *usual characteristics*, and always a sufficiency of them were present to mark the specific character of the disease, and the epidemic law—making all diseases, during its prevalence, wear its livery.

Case VII.—*Nov.* 1829. W. aged twenty-eight, of a delicate make and nervoso-sanguineous temperament, had been affected with a severe *simple gastritis* in the summer—recognised by red tongue, thirst, pain in scrobiculis cordis, particularly on swallowing solid food, glassy eyes and fever, as well also by the effect of mild mucilaginous ingesta, cupping to epigastrium, and emollient enemas. When taken with the yellow fever in this late period of the season, (having recently returned from the country,) *in addition to the above symptoms*, there was exhibited an universal yellowness of the cutaneous surface; delirium; dilated pupils; a dull, idiotic expression of eye; pains in limbs and head. Capillary bleeding had the effect of ameliorating, but could not subdue them; the general treatment pointed out above was also pursued, medical aid not being called until the third day. The fourth day was cold with frost, and on the sixth the patient died, with coffee-coloured vomiting. Permission could not be obtained to make an examination.

Remarks.—This case is more particularly given to exhibit the similarity and the difference between *simple gastritis* and the gastritis of yellow fever. The case made a very forcible impression upon me at the time, and was very influential in producing the opinion formerly stated. The occurrence of frost is almost always fatal to the cases on hand, unless very mild.

Case VIII.—*November*, 1829. S. aged about thirty-five, sanguine temperament; taken with the usual symptoms above enumerated. In

this case the delirium was more than usually violent, lasting about forty hours, and the tongue entirely dry and red; by the use of free cupping and leeching, which were several times repeated, the first to epigastrium, the second to the neck and head, and most perseveringly applied, fresh ones as fast as the others filled, with cooling applications, acidulated demulcent drinks, and emollient injections, and fomentations to abdomen, the worst features in the case were subdued; then a small dose of oil, and a continuance of the treatment for a few days, put the case beyond danger; it lasted five days.

Remarks.—This was a case of marked severity, and evinced in a distinguished manner, the triumphs of persevering capillary bleeding in removing an inflammation of apparently the most desperate character, having every symptom of an early termination in death, occurring in an individual of very fragile, delicate constitution; the result of any other treatment upon such a stomach and head, the individual being unable to swallow, except the mildest drinks, it is not difficult to anticipate. The patient during her whole illness knew nothing of what had transpired.

Case IX.—*Sept. 24th*, 1829. E. aged twenty, of delicate, sanguine temperament, and fair complexion, taken suddenly with the usual symptoms of marked violence. I saw her during the first hour, and found the characteristics of the disease very strongly marked; bronzed complexion; dilated pupils; dull, muddy eye; red tongue, and subsultus tendinum, and great tenderness on pressure at the epigastrium; bled and cupped very freely; light mucilaginous sub-acid drinks, cooling injections; fomentations to abdomen. On second day better, gave ten grains of calomel, followed by Seidlitz powder: the recurrence of fever afterwards was much lighter, and in three days she was convalescent.

Remarks.—This case shows the influence of active treatment at the *commencement.* The disease was met in its forming stage, and the symptoms indicated, that if not as promptly subdued, the utmost malignancy should be anticipated.

Case X.—*October 4th*, 1829. R. aged about thirty, sanguine temperament, full habit of body, had arrived about a week since from the upper Missouri, with a boat-load of apples, &c. he being one of the hands. I was called to him on the 4th, the second day of his illness, in his boat, near ankle deep, with bilge water and floating rotten apples; without any comforts; with most of the above symp-

toms; viz. deeply-bronzed complexion, with blood oozing from his gums; light fever; pulse 80 and full; eyes muddy, glassy, and idiotic expression, with very tender abdomen. He was very freely cupped and treated as above, which was repeated for three days; five grains of calomel was finally given him, and a light dose of oil. In the course of the treatment, he became perfectly yellow. On the second day the blood stopped oozing from the mouth. On the fourth day so much better as to be removed to the bank, and his convalescence was rapid, though the yellowness was some time in entirely subsiding.

Remarks.—The above exhibited the marked influence of local depletion in arresting that violent inflammation of stomach and intestines, and great ganglionic system in its early stage, which characterize, in a remarkable degree, the prominent symptoms, as well as post mortem appearances of yellow fever. The above was an instance of great malignancy, and its rapid yielding to the new treatment was as astonishing as it was gratifying. He had the poorest attendance, and was exposed most of the time to the disgusting effluvia of his offensive boat.

These were cases of those unhabituated to the climate, and selected on that account to show the effect of the treatment where there was no amelioration from climate—the three first had been here but a short time—the last had just arrived.

ART. IX. *Description of an Instrument for Venous Injection, by which the introduction of Air may be prevented.* By J. MAURAN, M. D. of Providence, R. I.

WE were early persuaded, that a part of the failure from the "venous injections," which have been resorted to for the promotion of reäction in aggravated cases of asphyxiated cholera, has arisen, (under the circumstances,) not so much from the *nature* of the operation, as from the manner of its performance, through the imperfections of the apparatus employed. This opinion has been subsequently fortified by the observations of Dr. FRANCIS, of New York, in a very interesting letter to the chairman of the Medical Board, Savannah, on the absorbing topic, wherein he states, that "in the few autopsic examinations of subjects after venous injections had been employed, great cerebral congestion has been found, and *air* within the heart,

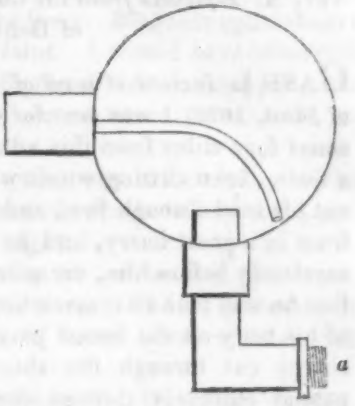
mesentery, and large blood-vessels;" and also by his further allusion to the horrors of a death, after the injections, which, he remarks, "are too terrific for delineation, even by a Fuseli." Are not the results above quoted, mainly the consequence of the presence of air in the blood-vessels?

From a perusal of an interesting communication by Prof. WARREN of Boston, illustrative of the appalling effects of such an accident on the system, as fully reported in the last No. of your Journal, and in the Boston Medical Magazine, we are still more of the opinion that our first impressions were correct. Air in the heart and blood-vessels, and sufficient in quantity to be perceived and noted in post obit examinations! It certainly did not exist in a free state in the blood, nor could it have been absorbed by the liquor, and afterwards disengaged, and thus rendered free; the temperature 113° of Fah., at which it was injected, precludes the possibility of such a phenomenon. Whence came it then, but through the imperfections of the instruments employed? I allude not to the more recent, very ingenious arrangement, (the barometer tube, &c.) of M. DEPEYRE, of New York, and adopted by him to avoid the very terrific effects above described—an instrument admirably calculated to avoid the introduction of air, and not otherwise objectionable than from the manifest inconvenience of its use, and want of portableness.

Air being inadmissible to the blood-vessels, though in ever so small quantities, without imminent danger to life in a healthy state of the functions, how necessary must it be to exclude it altogether, in an operation intended for the relief of that state, where the vital and physical powers, (extremely prostrated and reäcting tardily,) are but feebly calculated to resist even present disease, much less that superinduced artificially by the very means put in requisition for effecting said relief.

Our object in addressing you, is to communicate for insertion in your widely circulated journal, the plan of an instrument for venous injections, which is deemed to be eminently calculated for general use, being *safe*, convenient, and portable; and if its publication, by eliciting attention to the subject, should in any degree subserve the purposes for which it was intended, the ends of the writer will have been fully attained. From the experiments which have been instituted by LATTA, CRAIGIE, and MACKINTOSH, abroad, and those more recently performed in this country, we cannot longer doubt the recuperative effects of proper and judicious venous injections in aggravated cases of asphyxiated cholera; nor will their use be limited,

it is conjectured, exclusively to this disease; but may become eventually a beneficial adjuvant in other diseases which, resisting the ordinary methods of treatment, would otherwise be abandoned to the powers of the fell destroyer. Annexed is a plan of the apparatus proposed, which consists simply in the addition of a silver inserting tube,* and a *glass air-chamber*, to the "improved domestic instrument of MAW," (with which every practitioner and private family is, or ought to be supplied,) or to the more complicated stomach and injecting pumps of READ and others.



Method of use.—Adapt the screw *a* to the syringe, and the part *b* to the flexible tube, then, (the pump being placed in the liquor to be employed, the stop-cock of the inserting tube freely opened, and the tube inclined upwards,) by a few strokes of the piston, the expulsion of all the air is thoroughly effected, as will be evinced to the operator by the uninterrupted and silent jet. Having now the air-chamber nearly, and the remainder of the apparatus completely filled with the liquid, close the stop-cock so as to allow but a guttatim emission, and insert with care the extremity of the tube into the vein previously prepared for its reception. The contained fluid being under compression, and *constantly flowing* from the point of the instrument during its introduction, all admission of air into the vessels is thereby effectually excluded. Another advantage resulting from the stop-cock, which should be noticed, is the perfect regulation of the current during the process of injecting.†

Providence, Sept. 15th, 1832.

* I have occasionally terminated the inserting tube by a small bulb, say half a line in diameter, which I prefer to the oblique point.

† While upon the subject of cholera, I cannot avoid stating the fact, that all the cases which have taken place here, (say about twenty-five in number, and two-thirds fatal,) go to "*veto*" absolutely the subject of *contagion*, either immediate or contingent, as applied to this disease. Occurring in subjects having no acquaintance or communication whatever with each other, in different grades of society, in extreme parts of the city, attended almost invariably by different physicians and nurses, and all traceable to manifest errors and imprudence in diet, or to gross exposure. I state these facts with confidence, having

ART. X. *Extracts from the Case-book of* GEORGE T. MARTIN, M. D. of Denton, Maryland.

CASE I. *Incised Wound of the Foot.*—On the evening of the 27th of June, 1825, I was sent for to see Jonathan Evitts, a farmer, living about four miles from this village. On my arrival I found he had, in a frolic, been cutting wheat with one of his neighbours; that he had cut his load through first, and was returning to where he had started from in a great hurry, and in exultation; that, swinging his scythe carelessly before him, the point struck against a cornstock, and before he was able to recover his balance, he trod with the whole weight of his body on the broad part of the blade, which was remarkably sharp; cut through the shoe, though a tolerably thick one, and passed obliquely through the hollow of the foot between the os calcis and cuboides, and separated that portion of the astragulus which projects beyond the calcis, and is attached to the naviculare. A shocking sight was presented; the foot was lying back on the leg, and the parts had bled profusely; the countenance was pale, and he was almost without a pulse. I ordered him a little toddy, which revived him, and then commenced examining the wound with a view towards dressing it. I found that portion of the astragulus, which was attached to the naviculare, hanging by a mere thread of the ligament, and with one clip of my scissors separated it. After washing the blood from the wound, and finding that neither of the plantar arteries, which were divided, bled, I put the parts in apposition, and secured them in their places by eight sutures and adhesive strips, and applied over the whole a firm compress and bandage. I remained the night with Mr. E. and about day was told he was determined to get out of bed. Found him perfectly delirious, with a full, bounding pulse. Bled him a full quart, and gave him twelve grains of calomel. This was about five. I soon after left him, and saw him again about three in the evening. He had been quiet for a few hours, but was now furious, with a full, hard pulse. Again bled him a quart, and gave him an ounce of castor oil, as the calomel had operated but slightly. Staid with him two or three hours, and finding the fever to continue, took from him another quart.

29*th*. Medicine had operated finely, but there was no abatement

investigated them thoroughly. In fact, the country towns adjacent to our city have been visited in a proportion far in advance of ours, compared with their relative population, showing a pervading atmospheric influence.

of the fever, and the tongue very much furred. Opened a vein, and again took a quart of blood, and gave him an ounce of castor oil. Saw him in the evening. No abatement of the fever. Bled him again about a pint, when he became quite sick and faint. I should have observed, that at each of the bleedings before, the blood was not stopped until he had become quite sick and faint. Ordered the castor oil to be repeated.

July 1*st.* Fever abated, though the pulse was rather full, and the tongue much furred. Dressed the wound, which looked well, and had healed considerably at the upper edges.

7*th.* Had seen my patient daily, but as he had seemed to be recovering rapidly, did not note down particulars. To-day, however, he seems to be on the verge of a low typhoid fever. Ordered bark and wine. Bowels open.

8*th.* No improvement; cannot take the bark. Gave him quinine, twenty grains, to four ounces of water; a table-spoonful every two hours. Wound looks well, and discharges freely.

10*th.* Better; takes the quinine and wine freely; bowels confined. Ordered magnesia at night. Wound improving, and discharge lessened.

24*th.* To-day discovered a large abscess formed about three inches above the ankle; passed an abscess lancet in, and let out a full pint of thick pus. This surprised me a good deal, as my patient had had little or no fever for some days, nor had I discovered the slightest rigors, nor had the leg appeared swelled, yet I am free to admit that of the latter I may have been deceived. In two days the discharge ceased, and the wound healed. From this time my patient continued to recover slowly, and now enjoys excellent health, and with the exception of a little stiffness in the ankle, walks tolerably well.

Case II. *False Aneurism of the Popliteal Artery.*—Nathan Monship, a lad about sixteen, while playing with a large penknife, on the 13th of March, 1832, let it fall, and the blade, which was long, very sharp, and pointed, entered the innerpart of the right thigh, about three or four inches above the condyle. There was some jet of blood at the time, but a small plaster was laid over the wound, and a light bandage applied, which stopped the flow of blood, and the wound healed in a few days. On the 29th I was sent for, in consequence of the violent pain he complained of in the part. I found the leg not much swelled, but there was an evident pulsation in the part, which corresponded to each stroke of the artery at the wrist, and by osculation there was a loud, whizzing sound, as if something was forced

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through a small aperture. I informed his father of the very dangerous situation in which his son was placed, and at the same time told him I thought nothing but cutting down to the wounded artery, and tying it, could save his life. Accordingly, he not only assented to every thing I proposed, but urged that it should be done as soon as practicable.

On the 3d of April, in the presence of my friends, Drs. KEENE, ROUSSET, and HARPER, I proceeded to operate—first by making an incision about four inches over and partly through the sac, and then with my bistoury slitting the sac open, upwards and downwards, in its whole length. With my fingers I *scooped* out handful after handful of thick, coagulated blood, until I had taken from two to three pints, which astonished all present, particularly as the thigh appeared but little swelled. I now felt the warm jet of blood from under the great flexor of the thigh, and the artery lying under the tendon, and close to the bone. With much difficulty, after cutting through the facia, I passed two ligatures under the vessel, but could not succeed in separating the ligatures a quarter of an inch. I was now compelled to enlarge my incision upwards two inches, and take up the femoral artery, which was done without the least difficulty. The leg and thigh become cold as soon as the silk was drawn tight, but when I saw the boy five or six hours afterwards it had became quite warm, and was indeed one or two degrees warmer than the left leg. The wound was closed by adhesive strips, and a light compress and bandage applied over the whole.

4*th.* Slight fever; bowels confined. Ordered a spoonful of salts, which operated well by night; diet, mush and milk.

7*th.* Still a little fever every day about evening, and tongue furred. As the bowels had not been moved for several days, gave him at night ten grains of calomel, and ordered a table-spoonful of castor oil in the morning, if it should not have operated. Diet the same.

8*th.* Dressed the wound; it had healed considerably, and a good deal of dark grumous blood was discharged. There was some fever, and the bowels had been freely moved.

10*th.* Dressed the wound; appetite good; no fever; and the parts healed except where the ligatures are. Some dark grumous blood was discharged with matter. Allowed a more generous diet.

16*th.* Dressed the wound daily to this day, when the lower ligature came away. The discharge has nearly ceased, and the patient continues to improve; is without fever, and has a good appetite.

21*st.* Wound almost healed; patient in fine spirits, and has an excellent appetite.

May 18*th*. The health of the patient is excellent; he walks about without difficulty, yet the upper ligature is as fast as ever, and cannot be forced away. I determined to draw it pretty firmly, and cut it short.

24*th*. The wound has healed over, and the patient is well.

The history of this case points out the great advantage of animal ligatures over thread or silk. Could I have obtained these, or such as I thought sufficiently firm, they would certainly have been used, though in one or two cases of amputation and one of scirrhous breast, when I could not obtain the animal ligatures in time, I have cut the silk quite short, and found not the slightest inconvenience to ensue, nor have the persons, who are yet living, suffered in any way from them. Yet as a general rule it will not do, as they might become sources of irritation, and ultimately danger might ensue.

May 30*th*, 1832.

ART. XI. *Stimulating Antispasmodic Liniment*. By WILLIAM M. FAHNESTOCK, M. D.

WE have had in contemplation for some time past, to make public through this journal the prescription of a liniment which we have used in a variety of painful affections, and intended to introduce it in a continuation of our paper on *external medications*, published in the seventh volume of this journal; but which we have been prevented from extending in consequence of continued indisposition during the last sixteen months, which has disabled us entirely from pursuing our profession, and favourite science. And, indeed, we now feel a necessity for anticipating a notice of it in that place, from the great popularity the mixture has gained in the immediate circle of our friends, and the community in which we move—so much so as to have obtained the title of FAHNESTOCK'S LINIMENT—a distinction of which we are by no means ambitious.—℞. Spts. cornu cervi fort., Ol. olivar., Tr. opii, (Sydenham,) Ol. origanum, āā. ℥j. M. A tablespoonful, warmed in a pan or dish, *previously* heated, as it is very volatile and evaporates immediately, to be applied to the affected part, and covered with baked flannels—repeat every fifteen or thirty minutes pro re nata.

The origanum is an old and almost obsolete remedy, but it is one of the most pungent and penetrating stimulants. We were first led

to use it from *necessity*, as a substitute for horse-mint, and foundt ne relief so prompt and decided, that we have continued to employ it with the most happy effects for upwards of ten years. A brief notice of a few cases may suffice to illustrate its efficacy.

1822. S. M. æt. 24, of vigorous constitution and sedentary habits, being a journeyman taylor, had suffered frequently from a rheumatic affection of the maxillary articulation; which extended along the jaw bone, and into the throat; so much so at times, as to prevent mastication and deglutition. He had been treated at several different periods by our much lamented preceptor, Dr. MARTIN LUTHER, upon the *common* antiphlogistic plan—venesection, cathartics, nauseants, diaphoretics, &c. &c. and externally with fumigations, sinapisms, and epispastics, successively applied to the back of the neck, the throat and face—with scarcely any mitigation of the symptoms and suffering. After all this we recommended the above liniment, which produced almost immediate relief from the most excruciating agony under which he had been labouring for the six or eight preceding days. The patient has kept a bottle of the mixture by him ever since, and whenever threatened with an attack, checks it by an immediate application.

1823. A gentleman while at a cotillion party, six miles from his home, sustained an accident by treading on the side of his foot while in the act of dancing, which gave the ankle joint a severe wrench. A stream of cold water from a fountain was directed upon it for fifteen or twenty minutes, by which time the whole foot had swollen immensely; and when he arrived at his residence, the pain was almost insupportable. The above liniment was applied, and relief followed immediately. The application was repeated two or three times, he sunk to repose and passed comparatively a comfortable night.

It is in this species of accident that the mixture displays its signal efficacy. A few years since, a medical friend was treating a case of this kind, which proved very obstinate, having resisted blood-letting, leeches, and a variety of anodyne and refrigerant applications, when we were casually invited to see the patient. We recommended our favourite mixture, and the relief astonished both the patient and the medical attendant.

We then extended the remedy to various rheumatic affections with much advantage, but found it especially beneficial in that species called myostosis, or rheumatism of the muscles; and particularly of the intercostal spaces; a disease often mistaken for chronic pleuritis, which mistake frequently subjects the patient to the unnecessary torture of blisters, emetic plasters, &c.

Dr. PHYSICK, in the surgical remarks which he occasionally intro-

duced into his anatomical lectures, was in the habit of remarking on a peculiar state of the deltoid muscle, arising from slight injuries, which resembles and has frequently been mistaken for luxation of the shoulder joint, and for which he recommends rest alone. We have met with several cases of this kind attended by distressing symptoms, which have uniformly yielded to the liniment recommended. An affection similar to this is very common among wool and cotton spinners, who work at very large mules; which requires exertion principally of the deltoid muscle and humoral articulation. Such cases we have always found to be subdued by the application of this remedy.

Recently we have prescribed it with much success in the premonitory stages of the much dreaded cholera, and from its very prompt and distinguished antispasmodic virtues, have much reason to prefer it to every other application in that and similar affections.

We have the mixture sometimes prepared with but half the quantity of the origanum, as it may be too irritating to a very delicate surface. We have seen it vesicate in some instances where the flannel becomes soaked in the liniment while applying it. In cases where we desire a prompt and immediate impression, the mixture according to the prescription, applied frequently, will be found remarkably active and efficacious.

ART. XII. *Case in which a very large dose of Arsenic was taken by mistake, without fatal consequences.* By H. PERRINE, M. D.

THE following is a brief sketch from memory of an accident which occurred to myself in Bond County in the State of Illinois. While convalescing from dysentery, on the dawn of the 20th of September, 1821, I mixed some powdered Peruvian bark in a glass where sixty four grains of arsenic had been accidentally left by my oldest student, and drank all that it contained except what remained adhering to its internal surface, and then rode six or seven miles to visit a patient. On the route I experienced sickness and uneasiness in the stomach, which increased on my arrival, after unavailing efforts to sleep, so greatly as to induce me to promote vomiting by irritating my throat with my finger, but am not conscious of having discharged either bark or arsenic. I then had some partial slumber, which was interrupted by frightful dreams, accompanied with increasing uneasiness of the stomach, severe pain in the head, and violent agitation of the heart, and arteries, and general tremor of the muscles. Four hours had thus

passed, when my frightened student arrived, (now Dr. E. Pichett, of Huntsville, Alabama,) with the intelligence that from the traces in the glass I must have taken between fifty and sixty grains of arsenic. Terrible as was this news, it excited a degree of mental power that apparently regulated and strengthened the hitherto unequal action of the vascular system. I then felt, or thought I discovered preternatural heat in the stomach, and as my pulse had certainly become preternaturally strong, I had forty ounces of blood immediately taken from my arm, and within eight hours afterwards, twenty-four ounces more. My stomach was very repeatedly filled with warm milk and mucilaginous drinks, and as often immediately evacuated with the assistance of sulphate of copper. The bulky cathartic medicines, salts, senna, &c. in large quantities were then introduced, but the stomach had become so irritable as to reject them immediately. After going the rounds of more active substitutes, jalap, rhubarb, &c. I commenced with pills of calomel, ten grains each, every two hours, which amounted to two hundred and ten grains in forty hours, whose operation was assisted by numerous glysters. Blisters, rubefacients, and the warm bath were auxiliary remedies. My pulse continued increasing in frequency during the next days, Friday and Saturday, until near midnight, when it apparently ceased. The coldness of my extremities by this time had almost reached the trunk. During several hours I was gasping for breath, and suffering all that mortal inquietude which generally denotes the near approach of death. I felt a sense of suffocation and weight on my breast, and could barely whisper my desire to be placed in a bath of very hot water. I fell asleep in the bath, was removed to my bed with heating applications to my extremities, and looking as I then thought for the last time at the light of the candle, I again sunk into profound repose. I waked on the dawn of the sabbath, at first doubtful of a change of existence, and next apprehensive of the occurrence of gangrene. I slowly passed my fingers to my wrist, and discovered perspiration, warmth, and pulsation! I raised my hand to my mouth, where it encountered a free secretion of saliva! A discharge from my bowels which immediately followed was properly tested, and gave no indications of arsenic!

The above case may probably tend to settle one of the disputes among the experimenters on poisons—as it shows that arsenic does not operate exclusively on either the nervous or the vascular system. It need scarcely be added, that my will was dictated and signed while the arsenic was in my body.

REVIEWS.

ART. XIII. *A Treatise on the Diseases of the Heart and Great Vessels, comprising a New View of the Physiology of the Heart's Action, according to which the Physical signs are explained.* By J. HOPE, M. D. &c. &c. London, 1832. 8vo. pp. xxx. 612.

THE publication of Dr. Hope's excellent treatise will, we feel convinced, constitute an era in English medical literature; for, so far as we have been able to ascertain, it would have been impossible to point out previously a single original work in our language, containing a satisfactory view of the pathology, or a complete description and rational explanation of the physical and other diagnostic signs of diseases of the heart. The few works which treated, in any detail, of the morbid conditions of that important organ, and of the symptoms by which these may be detected—though undoubtedly, in some instances, containing much valuable information, and highly creditable to their authors, could no longer be regarded as capable of meeting the present demands of the profession—as imparting the degree and kind of knowledge which the progress of science has rendered indispensably necessary to the practising physician. Nor can this be a matter of astonishment to those who recollect, that BURNS and others, to whom we are indebted for those works, wrote at a period when the pathology of many of the diseases of the heart was but imperfectly understood, and when the physician, in his endeavours to establish a correct diagnosis, being deprived of the inestimable advantages resulting from certain modes of exploration, that are of a comparatively recent introduction in practice, was necessarily compelled to rely on signs, which daily experience taught him to regard as oftener deceptive than otherwise; or at least, by which the existence of those diseases could seldom be detected until they had reached a high degree of intensity. Judging, therefore, from the character of the treatises in question, as well as from that of a few other publications of minor importance, on the same subject, we may not only safely conclude that the English physicians had contributed but little to the advancement of our knowledge in relation to the pathology and diagnosis of cardiac diseases; but that they were, in that respect, in arrears of the French, who, previous to the re-

searches and discoveries of their distinguished countryman, LAENNEC, could boast of having produced one of the very best works on that subject—the treatise of CORVISART.

But we may go further, and affirm that even at a much later period —long after the French pathologists, guided by the light afforded by morbid anatomy, and by auscultation, had succeeded in rescuing the pathology of cardiac diseases from a portion of the obscurity in which it had formerly been involved; long after they had attained considerable accuracy in detecting the existence of those diseases, and had consigned the results of their observations in publications of great merit, the state of knowledge on these subjects, in England, was very far from having advanced as rapidly as could have been anticipated. The physicians of that country possessed, it is true, a translation of Laennec's invaluable work on Mediate Auscultation; and a few among their number had, through the medium of detached publications, or of periodical works, advocated, from the commencement, the necessity of resorting, in all cases in which the existence of diseases of the lungs and heart was suspected, to the stethoscope and to percussion. Nevertheless, we believe it may safely be affirmed, that the advocates of auscultation and percussion were, up to a recent period, very limited in number in England, and that the majority of English practitioners continued greatly in arrears of their continental brethren, in regard to the pathology and diagnosis of diseases of the heart. This arose from the unwillingness which prevailed among many, to investigate the utility of the modes of exploration in question—an unwillingness which must have arisen from indolence or prejudice; to the dampness cast on the subject by the failures of some who, less backward than the rest of their fellow practitioners, had early attempted to test the utility of those means—failures which, viewing the difficulty of becoming familiar with the signs furnished by the stethoscope, might have been predicted; to the idea prevailing among some physicians, that diseases of the heart are not of as frequent occurrence as is sometimes maintained—the symptoms of these being referred by the former, to some unintelligible derangement of the nervous or sanguiferous system, and the alterations found on dissection being regarded in the light of coïncident and unimportant circumstances; moreover to the spirit of suspicion and scepticism with which almost every discovery is at first received from abroad; and finally, to the belief that Laennec and his followers had *refined* too much, and attached more importance to his discoveries, so far as diseases of the heart are concerned, than they are entitled to.

While such was the apathy existing, for a long time, in England relatively to the new modes of exploration—and that we have not exaggerated the picture, we confidently appeal to every one who is conversant with English medical literature—an equal degree of indifference, leading to an almost total neglect of the available sources of information on the subject, prevailed in this country. To such an extent, indeed, was this apathy carried, that, though Forbes' translation of Laennec was republished here several years ago, and though the subject was often noticed and advocated in our periodical works, it would have been impossible, until recently, to enumerate more than a very few physicians who had succeeded, by patient researches, in overcoming the difficulties incident to the study of auscultation and percussion, and who availed themselves, in practice, of the advantages derived from those modes of exploration in diseases of the lungs and heart. But it is gratifying to be able to record that a change of sentiment on this subject is manifesting itself daily among us, and that here, as well as in England, the use of the stethoscope, which must necessarily lead to a better knowledge of the physical signs of diseases of the thoracic organs, is becoming more generally adopted.

The results of the researches of several of those who have thus become converts to the new modes of exploration, have been consigned in various periodical and other publications; but, as has been stated already, until Dr. Hope put forth the present treatise, we did not possess, in our language, an original and comprehensive treatise on the diseases of the heart, in which the utility and importance of auscultation were suitably advocated and illustrated, or in which the causes of the phenomena observed, were explained in a philosophical and satisfactory manner.

But while thus congratulating ourselves on the progress which has been recently made in England and this country, in a knowledge of the pathology and physical signs of cardiac diseases, it is far from our wish to intimate the idea, that the pathologists of the present day have, either in France or elsewhere, succeeded in entirely clearing those subjects of the difficulties which they formerly presented; or that they have universally admitted the utility of auscultation. So far from this being our intention, we believe every candid and experienced auscultator will allow, that he occasionally meets with cases which baffle all his efforts at establishing correct rules of diagnosis. On this, as well as on the other point, we can adduce the testimony of Dr. Hope himself, who admits, that authors actually have not succeeded in completely redeeming this subject from its obscurity. Hence, he says, notwithstanding the strong light diffused

over these diseases by the researches of Corvisart, Kreysig, Burns, &c.—

"Notwithstanding the brilliant sunshine emanating from the discovery of auscultation by Laennec—a discovery which, according to M. Bertin, has in a few years, more completely illuminated the diagnosis of the diseases in question, than all the other modes of exploration had done for two centuries; the great body of the profession still deny that the piercing ray has reached its destination, still doubt the utility of auscultation in reference to the primary organ of the circulation, still find the ordinary symptoms beset with their accustomed difficulties, still complain, in short, that the obscurity which involves the diseases of which we speak, is scarcely less profound than ever; and, while conflicting opinions are embarrassing the judgment, and undermining the confidence of the patient investigator of truth, there is a general outcry for an additional mass of well-attested evidence, which may bring the subject to some kind of a conclusion."

Dr. Hope's work is far from being a mere compilation from the writings of his predecessors. Although he is, and necessarily must be, greatly indebted to the researches of Laennec, Bertin, Bouillaud, and other French writers on the diseases of the heart; he has, in this performance, displayed no ordinary share of talent for original and accurate observation, and has diligently examined the views of those distinguished pathologists in the way they deserved to be examined, by noticing the general symptoms and physical signs which present themselves in individuals labouring under cardiac diseases, and comparing those phenomena with the morbid and structural changes revealed on dissection. In prosecuting his researches in this manner, he has been enabled to confirm, on a very great number of points connected with the subject in question, the views of his predecessors; and at the same time to indicate some of the errors into which they have fallen. In attempting this, he remarks, with a degree of modesty, which is as praiseworthy as it is rarely found among professional writers, that in pointing out where he differs from preceding writers, he is anxious to offer his opinions, not as established facts, though he trusts they will be found grounded on careful observation, but simply as propositions to be admitted or rejected, according to the test of general experience.

Dr. Hope remarks that the most prominent error which reigns throughout the doctrines of Laennec, and which has prevailed in the schools since the first publication of his work is, that he mistook the nature of the action of the heart. On this point, Dr. H. has substituted a new theory, which he trusts may be found more satisfactory. According to this theory, to which we shall recur presently, and which is founded on clinical observations and a number of experi-

ments, he has taken the decisive step of modifying and explaining all the physical signs of diseases of the heart. Dr. Hope next alludes to the error which Laennec and those who preceded him committed in assigning to diseases of the heart a certain series of symptoms, which they conceived to be common to the whole, and in not analyzing these symptoms and ascertaining which were peculiar to, and pathognomonic of, the several affections individually. Bertin and Bouillaud made this attempt, and with partial success; but the spirit of generalization carried them too far. Dr. H. regards as an inaccuracy the very "pivot on which turns the principal train of their reasoning," that the symptoms of a retarded circulation are, under all circumstances, the result of a *mechanical obstacle* to the course of the blood; that when, for instance, they accompany hypertrophy or dilatation, they are not consequences of these affections, but of some coëxistent mechanical obstacle, as a contracted valve, an aortic aneurism, &c. So far from adopting this sentiment, Dr. H. has undertaken to show, not only that hypertrophy and dilatation can, of themselves, respectively occasion the symptoms in question, but that these symptoms are seldom produced in any very remarkable degree of severity by a mechanical obstruction, unless hypertrophy, dilatation, or softening of the heart is superadded.

Dr. Hope admits, that the erroneous views which Laennec took of the action of the heart led the latter to but few corresponding errors in his doctrine of auscultation. He is of opinion, indeed, that with one exception,—that of considering loudness of the second sound as an indication of dilatation of the auricle, the errors are those of omission and of incorrect explanation. The omissions are, however, considerable and important. His wrong views respecting the cause of the bellows murmurs naturally shook the confidence of many, and eventually of himself in his theory of valvular murmurs.

"For, the lesion being found in one valve, when, according to that theory, it was expected in another, the inevitable conclusion was, that the theory was incorrect. At the same time the cause of the murmur remained doubtful."

Murmurs that exist independently of valvular disease, and accompany both hypertrophy with dilatation, and a nervous action of the heart without any organic lesion whatever, were, as Dr. H. has shown, attributed by Laennec to a wrong cause—to the sound of the muscular contraction. Nor was he more fortunate in his explanation of several minor phenomena, as the purring tremor, the arterial thrill and bellows murmur,—referring them, as he did, to some unknown "modification of the nervous action." On the causes of all these phenomena, Dr. H. has dwelt at some length in the body of the work; and

has suggested a theory which we shall have occasion to notice while examining his chapters on the subject.

But independently of the points to which we have alluded, Dr. Hope has investigated others of considerable importance on which he has succeeded in throwing light—correcting the errors or supplying the omissions of his predecessors. We can only particularize, at this moment, aneurism of the aorta and the treatment of diseases of the heart. The results of his investigations on the first of these subjects will, we have no doubt, prove highly advantageous, inasmuch as the stock of our knowledge, in relation to it, was very limited,—Laennec having himself confessed, that like pericarditis and polypi of the heart, aneurism of the aorta remained without pathognomonic signs. As regards the treatment of diseases of the heart, it is well remarked by Dr. Hope, that previous to the discovery of auscultation, these maladies could seldom be detected before they were so far advanced as to be incurable—that then was not the time to judge of the efficacy of remedies—that Laennec, absorbed in his investigation of the diagnosis, paid comparatively little attention to the treatment—and that Bertin and Bouillaud are not satisfactory, giving a bold outline of leading principles, but seldom descending into detailed delineations of therapeutic measures, which are essential to the practitioner at the bedside.

"Nor are these principles always, perhaps, perfectly sound. Their habit of attributing the symptoms of a retarded circulation, under all circumstances, to one cause only,—a mechanical obstacle, gives a wrong bias to the mind; and that of entwining inflammation with the cause of almost every organic lesion of the heart and great vessels, is replete with danger to the inexperienced practitioner."

Dr. H. very justly censures the idea, entertained by many physicians, that the expectation of effecting an improvement in the treatment of diseases of the heart is chimerical; an opinion based on the circumstance that such physicians are not accustomed to recognise the diseases in question before they have attained an advanced stage and have thus become incurable.

"To such it might, perhaps, be a sufficiently philosophical answer to reply; that an improved knowledge of the nature and causes of a disease must alone necessarily lead to an improvement in the treatment; and that therapeutic weapons are dangerous when wielded in the dark. But here we may go much further; we may say that, by the improved means of diagnosis, the maladies under consideration may be recognised, not only in their advanced, but in their incipient stages, and even when so slight as to constitute little more than a tendency. We may say on the grounds of incontestible experience, that, in their early stages, they are, in a large proportion of instances, susceptible of a perfect

cure; and that, when not, they may, in general, be so far counteracted as not materially, and sometimes not at all, to curtail the existence of the patient."

Dr. Hope next adverts to the collateral practical improvements to be expected from a better knowledge of diseases of the heart. He points out to the fact, stated by many modern writers, that hypertrophic enlargement of the heart is more closely allied to apoplexy and palsy than the apoplectic constitution itself.

"Should the hypertrophy be recognised, its effects on the brain may be counteracted by judicious treatment; should it be overlooked, the patient with a view to reducing his *apoplectic fulness of habit*, is ordered smart exercise, which by increasing the action of the heart, already too powerful, causes a preternatural determination of blood to the brain and induces the apoplectic or paralytic seizure."

There are few more common and certain exciting causes of palpitation and difficulty of breathing in diseases of the heart than derangement of the stomach. The true nature of this case being generally mistaken, and the attack being traced to a dyspeptic fit, "good air and plenty of exercise" are recommended, and the result is an apoplectic seizure.

"The circumstance that before the introduction of the new mode of exploring diseases of the heart, they could rarely be detected in their early stages, contributed to the error in question. For, as patients frequently recover from the early stages, the recovery was regarded by those who assumed this class of diseases to be incurable, as a proof that the affection was merely dyspeptic. Hence dyspepsia acquired the reputation of producing certain symptoms, particularly in the head, which are in reality foreign to it, being exclusively the results of a coëxistent disease of the heart."

On the other hand, nervous, or really dyspeptic palpitations are *often mistaken for diseases of the heart; an immense proportion of* asthmas, and of the most dangerous and distressing cases, result from diseases of the heart; so do likewise dropsies, especially those that are universal. In acute rheumatism, Dr. H. justly remarks, that there is no more common and formidable source of danger than inflammation of the heart and its investing membrane; that there is scarcely a disease of the heart, accompanied with obstruction of the circulation, for any considerable period, which is not productive of enlargement of the liver, and sooner or later of its ordinary consequence—abdominal dropsy; that individuals affected with disease of the heart are peculiarly liable to very rapid and destructive inflammation of the lungs, which will not bear the free depletion resorted to in ordinary affections of those organs; lastly, that in fever and inflammation in general, disease of the heart may impart to the pulse dangerous deceptive characters of hardness, fulness, weakness, or ir-

regularity, and the patient may be bled too much from the prevalence of the former characters, or too little from the prevalence of the latter. It is evident that an acquaintance with the signs of diseases of the heart, as imparted by the stethoscope, or by other means, will enable the practitioner to form, in all the cases we have mentioned, a more correct idea of the true nature of the malady, and to establish a more appropriate plan of treatment.

"Thus it is seen, that the practical improvements to be derived from a better knowledge of the diseases of the heart, extend, not to the diseases of this organ alone, but to a multitude of the most formidable maladies incident to the human frame. There is, in short, scarcely an affection with which disease of the heart may not be more or less interwoven; and 'if,' to use the language of Senac, 'we would not pronounce rashly on an infinity of cases; if we would not harass our patients by noxious and unavailing remedies; if we would not accelerate death by treating certain diseases like others which are entirely different; nor be exposed to the disgrace of seeing our diagnosis falsified by the results of dissection; finally, if we would not have danger to be imminent, while we are under the blind impression that it is remote, we must study the diseases of the heart.'"

As it would be out of our power to present, within the narrow compass of a single article, a full analysis of the contents of the excellent work before us, which embraces a wide field of inquiry, we shall dwell more particularly on those of the first part, which contains the author's views respecting the anatomy of the heart, and the physiological and pathological phenomena of the action of that organ. Nor shall we enter fully on the first of these subjects, contenting ourselves with referring such of our readers as are desirous of studying or refreshing their memory on it, to any of the numerous treatises of descriptive anatomy which we possess. Indeed, our author himself abstains from all minute description of the heart, alleging, that this subject presents no obscurity, and ought to be studied in much greater detail than is consistent with the plan of his work. He dwells, however, at some length on a few points connected with the subject—namely, on the relative size of the heart to the whole frame, and of its several compartments to each other; and on the exact situation of the organ. He remarks, that it is ignorance in respect to the first of these points that has for centuries caused thickening, attenuation, enlargement and diminution to be overlooked, and the symptoms of disease of the heart to be attributed to any cause but the legitimate one; but adds, that unfortunately it is impossible to determine the natural dimensions of that organ positively:—

"For as they vary according to age, sex, and other circumstances, there is no immutable standard of comparison which might serve as the criterion.

It is only by the eye, therefore, (and an experienced eye is necessary for the purpose,) that it can be determined whether the proportion of the heart to the system, and of its several parts to each other are natural. The proportions assigned by Laennec approach perhaps as near the truth as it is possible to arrive—they are as follows. 'The heart, comprising the auricles, ought to have a size equal to, a little less, or a very little larger than, the fist of the subject. The walls of the left ventricle ought to have a thickness a little more than double that of the walls of the right: they ought not to collapse when an incision is made into the cavity. The right ventricle, a little larger than the left, and having larger columnæ carneæ notwithstanding the inferior thickness of its walls, ought to collapse after an incision has been made into it. Reason indicates and observation proves, that, in a sound and well-built subject, the four cavities of the heart are, within very little, equal to each other. But as the walls of the auricles are very thin, and those of the ventricles have much thickness, it results that the auricles form scarcely a third of the total volume of the organ, or the half of that of the ventricles.' 'In the fœtus and very young children, the thickness of the left ventricle does not exceed that of the right to the extent described.'

"'The right cavities are rather larger than the left, and this is not owing to sanguineous distention attendant on dissolution: for the disparity is found, though in a less degree, in animals destroyed by hæmorrhage.'"

In reference to the exact situation of the heart, Dr. Hope states, that as the apex and body of the heart are free, while the base, secured by the great vessels, is comparatively, though not absolutely, fixed, the organ turns in a slight degree upon its base with each alternate movement of the diaphragm, the descent of the muscle causing its longitudinal axis to assume a more vertical position, and the ascent throwing it transversely to the left. Hence the auscultator must fix upon some point at the base, which may serve as a mark and guide for his exploration of the situation of the organ.

"The point which to myself has appeared the most certain, is the pulmonary artery. This vessel, midway between its origin and the place where it divaricates into the two trunks distributed to the lungs, bulges at the interspace between the second and third left ribs close to the sternum, a circumstance which, as well as the situation of the other parts of the heart, I have carefully ascertained by forcing needles through the thoracic walls, at given points, into the viscera beneath."

"A line drawn from the inferior margins of the third ribs across the sternum, passes over the pulmonic valves a little to the left of the mesial line, and those of the aorta are almost directly behind them. From this point the aorta and pulmonary artery ascend; the former inclining slightly to the right, coming in contact with the sternum when it emerges from beneath the pulmonary artery, and following, or perhaps rather exceeding, the mesial line, till it forms its arch; the latter, which is, from the first, in contact with the sternum, inclining more considerably to the left until it arrives at the interspace between the second and third ribs above described. A vertical line coïnciding with the left

margin of the sternum, has about one-third of the heart, consisting of the upper portion of the right ventricle, on its right; and two-thirds composed of the lower portion of the right ventricle and the whole of the left, on its left. The apex beats between the cartilages of the fifth and sixth ribs, at a point about two inches below the nipple, and one inch on its sternal side.

"The lungs descend along the margins of the sternum about two inches apart, and overlap the base of the heart, slightly on the right side, and more extensively on the left: then, receding from each other, they leave a considerable portion of the right ventricle, and a less extent of the lower part of the left, in immediate contact with the sternum.

"The right auricle is in front of the heart, at its right side and upper part. One portion of it is overlapped by the right lung, and another, principally the appendix, is in contact with the sternum. The left auricle is situated deep behind and to the left of the heart at its upper part, opposite to the interval between the cartilages of the third and fourth ribs. The extremity of the appendix is visible in front, but, when the volume of the heart is natural, it is not in contact with the sternum, being considerably overlapped by the left lung. The pericardium ascends on the great vessels as high as the commencement of the arch of the aorta, and opposite to the second rib. When the heart is enlarged its longitudinal axis becomes placed more transversely, and its lateral diameter is increased. Hence the right ventricle projects more considerably to the right, sometimes under the whole breadth of the sternum; and the left extends far beyond its usual limits to the left, sometimes elevating by compression that portion of the lung which overlaps it, so as to bring nearly its whole surface, and the tip of the auricular appendix, in contact with the sternum. In addition to being broader and placed more transversely, the organ descends lower than natural—its apex sometimes beating between the sixth and seventh ribs, and its pulsations extending to the epigastrium.

"When the right auricle is dilated or gorged, it extends upwards and to the right, and comes more extensively in contact with the sternum. When the pericardium is distended to the utmost with fluid, it forms a pear-shaped bag, the top or narrow extremity of which sometimes mounts even above the second rib: its sides are nearly in contact with the sides of the heart, while its front is separated from the anterior surface of the heart, in the dead subject, by two or three inches of interposed fluid.

"From the above description the auscultator will understand in what situations to explore the lesions of the various parts of the heart."

While on the subject, Dr H. makes some observations on percussion in its application to the exploration of the chest in disease of the heart. He gives a preference to the employment of the plessimeter over the common method of percussion on the back of the fingers firmly applied to the thorax. After remarking, that it is scarcely necessary to say, that percussion on a solid, as the heart where it is in contact with the sternum, elicits a dead sound; while that on a body containing air, as the lungs, stomach, &c. produces a hollow sound, he adds, that it is less known, and still less believed, that a

solid, beneath a sonorous body, as the liver beneath the lung that overlaps it, &c. may be recognised by a sound intermediate between hollow and dead. The principle of the phenomenon may be explained according to the laws of acoustics.

"Thus, when the vibrations of the air impinge on a non-resonant or inelastic surface, they are arrested, and the sound becomes deadened." "To apply this principle to the percussion of the chest—sonorous vibrations excited in the lung are arrested when they impinge upon a solid, inelastic body beneath, as the liver, heart, &c. hence the sound, at first hollow, presently becomes dead. To elicit these characters distinctly, a loud sound should be produced; and this may be effected by strong percussion, and by pressing the plessimeter firmly down, so as to condense the soft wall of the chest, and render it a better conductor of sound. When there is no subjacent solid body, the sonorous vibrations expand freely, and yield a proportionably hollow sound. Having just tried the experiment before several individuals placed at remote parts of a spacious room, I find that they readily distinguish the full, hollow tone of the middle lobe of the lung, the duller intonation of the lung overlapping the heart or liver, and the dead sound of the præcordial region where the heart is in contact with the chest. Accordingly, the circumference of this organ may be measured with considerable nicety by percussion on the plessimeter."

Dr. Hope next passes to the subject of the nature of the action of the heart. It must be known to many of our readers that when we apply the ear or a stethoscope to the præcordial region, we hear two successive sounds, and find that they are followed by an interval of silence or repose. The former of these sounds is synchronous with the cardiac impulse, and, in vessels near the heart, with the pulse. It is duller and slower than the latter, into which it terminates. The second sound is also louder and smarter, like the flapping of a bellows' valve. Dr. Hope remarks, that these sounds, first noticed by Laennec, were attributed by him, the one to the ventricular, the other to the auricular contraction, and that this doctrine remained unquestioned for a period of eight or ten years, until Mr. Turner, supported by the authority of the old physiologists, Haller, Harvey, Lancisi, &c. pointed out that the auricular contraction, to which Laennec attributed the second sound, preceded the ventricular, and consequently, that his theory was erroneous. Notwithstanding the talent and ingenuity displayed by Mr. Turner in proving this, he was not equally successful in assigning the cause of the second sound; and though various theories were subsequently proposed, Dr. H. thinks that the nature of the heart's action remained a mystery until it was made the subject of a series of experiments instituted by himself. These experiments were performed in the summer of 1830, and the results obtained were consigned in two numbers,

(July 31st and August 21st, 1830,) of the London Medical Gazette. They were repeated in the summer of the following year, when the conclusions drawn from the former set, were fully confirmed. It is not in our power to present, in this place, a detailed account of these experiments, a subject which occupies a considerable number of pages of Dr. Hope's volume, and for which we must refer to the work itself, and shall restrict ourselves to an enumeration of the conclusions, which, as Dr. H. very properly remarks, are deducible from them.

Of the Motions of the Heart.

"1. The auricles contract so immediately before the ventricles, that the one motion is propagated into the other, almost as if by continuity of action; yet the motion is not so quick that it cannot readily be traced with the eye.

"2. The extent of the auricular contraction is very inconsiderable, probably not amounting to one-third of its volume. Hence the quantity of blood expelled by it into the ventricle, is much less than its capacity would indicate.

"3. The ventricular contraction is the cause of the impulse against the side; first, because the auricular contraction is too inconsiderable to be capable of producing it; second, because the impulse occurs after the auricular contraction, and simultaneously with the ventricular, as ascertained by the sight and touch; third, because the impulse coïncides with the pulse so accurately as not to admit of being ascribed to any but the same cause.

"4. It is the apex of the heart which strikes the ribs.

"5. The ventricular contraction commences suddenly, but it is prolonged until an instant before the second sound, which instant is occupied by the ventricular diastole.

"6. The ventricles do not appear even to empty themselves completely.

"7. The systole is followed by a diastole, which is an instantaneous motion, accompanied with an influx of blood from the auricles, by which the ventricles reëxpand, but the apex collapses and retires from the side.

"8. After the diastole, the ventricles remain quiescent, and in a state of apparently natural fulness, until again stimulated by the succeeding auricular contraction."

Of the Sounds.

"9. The *first sound* is caused by the systole of the ventricles.

"10. The *second sound* is occasioned by the diastole of the ventricles."

Of the Rhythm.

Order of succession—

"1. The auricular systole.

"2. The ventricular systole, the impulse, and the pulse.

"3. The ventricular diastole.

"4. The interval of ventricular repose, towards the termination of which the auricular systole takes place."

Duration.

This is the same as indicated by Laennec, viz;—

"The ventricular systole occupies half the time, or thereabout, of a whole beat.

"The ventricular diastole occupies one-fourth or at most one-third.

"The interval of repose occupies one-fourth, or rather less.

"The auricular systole occupies a portion of the interval of repose."

From the experiments which were performed in the summer of 1831, in presence of a number of the most intelligent and distinguished professional gentlemen in London, the accuracy of the results before obtained was confirmed. A few days previous to the experiments, a series of queries was distributed to those individuals present. They were read at each meeting, and the answers are affirmed to be the joint dictation of the party, partly during the experiment, and partly at the successive recapitulations.

From the answers in question, which Dr. H. has transcribed in full, it appears that the gentlemen who witnessed the experiments, came unanimously to the following conclusions:—

1. The ventricular systole, the first sound, the cardiac impulse and the arterial pulse coïncide perfectly, except that sometimes there appeared to be a *barely* appreciable interval between the impulse or first motion of the ventricle and the pulse in the radial artery. This interval being ascribed to the distance of the artery from the heart.

2. The ventricles being opaque, it is impossible to demonstrate whether they expel their contents completely or not, but the diminution of their volume by the systole is not so great as to justify the inference that they do. During the interval of repose they are full, but not distended. The question whether the ventricles expelled the whole of their contents or not, originated in the opinion that they did so, and that, by the collision of their internal surfaces, they occasioned the second sound. As this sound is proved, however, to result from the diastole, the question becomes redundant and its determination a matter of indifference.

3. The second sound coïncided with a motion cognizable by touch and sight, by which the ventricle returned from its systole to the same state, with respect to size, form, and position, as before the systole. This motion was the relaxation or diastole.

4. The auricles evidently contract before the ventricle; and the phenomenon is instantly followed by the ventricular systole. The quiescent interval distinctly falls between the ventricular diastole and the auricular systole, the repose of the ventricles continuing through the auricular systole to the ventricular contraction.

For the most part, however, there was either no perceptible motion in the auricles, or the motions were irregular and bore no relation whatever to the ventricular movements.*

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* From the results of subsequent experiments on rabbits, Dr. H. was led to the opinion, that the irregularity of the heart's action is an incidental circum-

5. The auricles contract very slightly and principally at the appendix, the motion running vermicularly into the ventricular systole.

6. The auricles are constantly full, their motions ranging between fulness and distention. It is to be further remarked, that the first and second sounds were heard and the corresponding motions, (the systole and diastole of the ventricles,) were felt, even when the auricles remained in a quiescent state. Dr. H. adds, that had this observation been made in his first experiments, it would have superseded the necessity for much reasoning, as it conclusively fixes the sounds, the impulse and the *back stroke*, on the ventricles. It was further observed that when the heart was gorged, towards the conclusion of the experiments, the first sound only was heard—a phenomenon, which, as remarked by Dr. Hope, when combined with the very feeble action of the heart noticed under these circumstances, displays the cause of the diminution of sound and impulse in suffocative dyspnœa and on the supervention of death.

It may be proper to mention in this place, that the question of the motions and sounds of the heart has given rise, within a few years, to considerable discussion, and that experimenters on the subject have often arrived at conclusions diametrically opposed to those which as we have seen Dr. Hope and his friends deduced from their experiments. Besides Mr. Turner, whose name has already been mentioned in connexion with this subject, and whose essay will be found in the third volume of the Transactions of the Medico-Chirurgical Society of Edinburgh, several distinguished physiologists of England and the continent, Drs. Williams, Corrigan, Haycraft, Bond, Stokes, and Prigeaux, took an active part in this discussion. The views of these gentlemen in reference to the motions and the causes of the sounds of the heart, may be stated in the following words:—

Order of Succession.

1. The contraction of the auricles, (comparatively slow,) take place first. (*Corrigan, Prigeaux, Stokes.*)

2. The contraction of the ventricles, with extreme rapidity, follows that of the auricles. (*Corrigan, Prigeaux, Stokes.*)

3. The pause.

4. The impulse does not take place during the contraction of the ventricles, but during their dilatation. (*Corrigan, Stokes, Prigeaux, Haycraft.*)

5. The impulse is caused, not by the contraction of the ventricles, but by that of the auricles, and is dependent on the force with which the auricles send their blood into the ventricles. (*Corrigan.*) It is due to the muscular action of the ventricles during the diastole. (*Haycraft, Stokes.*)

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stance, dependent on the mode in which the animal is stupified, and artificial respiration maintained; consequently that it is capable of being obviated. He found, in cases in which he stupified the animal with the woorara poison, that if artificial respiration was adequately maintained, the action of the heart could be kept in the greatest perfection after the cerebral life of the animal had become completely extinct.

6. When the auricles contract, the ventricles are dilated and the heart comes forward. *(Corrigan.)*

7. When the ventricles contract the heart retires. *(Corrigan.)*

Of the Sounds of the Heart.

1. The first sound is caused by the rush of the blood from the auricles into dilating ventricles, and not by the contraction of the ventricles, as hitherto taught. *(Corrigan.)* By the expansion of the appendix. *(Barry.)*

2. The second sound is caused, not by the contraction of the auricles, the falling back of the heart or the action of the valves, but by the striking together of the internal surfaces of the ventricles. *(Corrigan.)* By the elasticity of the ventricles by which they resume their hollow state. *(G. D. M.)* By the sudden arrest given to the further ingress of blood into the auricle by the complete occlusion of the auriculo-ventricular orifice at the instant of the ventricular contraction. *(Bond.)* By the contraction of the ventricles and dilatation of the auricles. *(Stokes.)* By the check to the motion of the blood towards the aorta, by sudden cessation of the ventricular contraction. *(Haycraft.)* By the action of the valves of the auricular orifices. *(Williams.)* "The cause of both sounds at the chest is the *frottement*, or more correctly the check given to the motion of the blood in the ventricles." *(Prigeaux.)*

Rhythm.

1. The impulse and long sound come first, and are synchronous. *(Corrigan.)*

2. The pulse. *(Corrigan.)*

3. The second or short sound. *(Corrigan.*)*

Duration of a single Action.

The auricular contraction occupies one-half the time of a whole beat. *(Corrigan.)*

The ventricular contraction one-fourth of the time. *(Corrigan.)*

The interval of repose the remaining fourth. *(Corrigan.)*

Thus the ventricles which require it, have eighteen hours rest out of the twenty-four; and the auricles, having less labour to perform, only twelve. *(Corrigan.)*

It is thus seen, that in regard to the order of succession of the movements of the heart, Dr. Hope agrees with Drs. Turner, Williams, Corrigan, as well as with the older physiologists, holding with them, that the auricular contraction precedes the ventricular,

* It is proper to remark that, although some of these physiologists—Drs. Corrigan, Stokes, &c. regard the impulse to be produced by the dilatation of the ventricles, and deny that it is synchronous with the pulse, they admit that this want of harmony is observed only in distant arteries, and disappears in the vessels situated near the heart. Dr. Stokes and Dr. Elliotson remark, that the difference is in direct ratio to the distance of the vessels from the centre of the circulation.

and that both these are followed by the state of repose. But it is not less clear, that on almost every other point, his experiments have led him to conclusions more or less opposed to theirs,—maintaining, as he does, that the contraction of the ventricles is prolonged, not rapid, as affirmed by Dr. Corrigan and some others; that the contraction of the auricles is smart and brief, not comparatively slow; that the impulse is given when the ventricles, not the auricles, contract; that the heart retires from the side when the ventricles dilate, and not when they contract; and that the beat is produced, not by the rush of blood from the auricles, but by the contractile nisus of the ventricle itself upon this blood, assisted by the simultaneous distention of the auricles. As regards the causes of the sound, we shall presently have occasion to show, that Dr. Hope differs materially from the other physiologists we have mentioned.

Many of the experiments from which Drs. Corrigan, Prigeaux, Haycraft, and Stokes have drawn the conclusions to which we have just adverted, as well as many of the arguments by which the views of these gentlemen, in relation to the motions and sounds of the heart, are sustained, are undoubtedly entitled to a careful consideration. Nevertheless, we believe that few individuals competent to decide on questions of the sort, and conversant with the experiments and arguments adduced on both sides, could, if called upon to pronounce between the views adopted by Dr. Hope and those advocated by his antagonists, hesitate for a moment to give the preference to the former, particularly as their accuracy was fully confirmed by the experiments instituted by our author in the summer of 1830; consequently at a period subsequent to the publications of Drs. Corrigan, Haycraft, Stokes, &c. for the refutation of whose conclusions, (though he does not mention the names, or allude to the sentiments of either of these gentlemen in the present volume,) his first essays, which appeared in the London Medical Gazette, were undertaken and published.

Having, as has been shown, succeeded in establishing his conclusions relatively to the subject in question, Dr. Hope presents, in a separate section, a few observations in explanation of the muscular mechanism of the heart's action, both in a state of health and disease. He remarks, that though Haller very accurately noticed the motions of the heart, he was unable to account for the particular order of their occurrence. Our author finds no difficulty in assigning the reasons of this order. Agreeably to his views of the subject, the auricles, which are always in a state of fulness, though not distention, arrive from the progressive influx of blood during the first portion of the ventricular repose, at the state of distention, by which

they are stimulated to contract. The object for the contraction at this moment, is the propulsion of a small additional quantity of blood into the ventricles, already full, for the purpose of bringing them from the state of mere fulness to that of distention; an object which could not be accomplished without a contraction, as the blood could not otherwise force its way into the ventricles, against the resistance offered by their elastic parieties. These cavities then, being brought to the state of distention, are thereby stimulated to contract, by which the apex is tilted forwards and upwards, and occasions the impulse against the ribs. In reference to the mechanism of this motion, Dr. Hope makes the following remarks:—

"When the heart of an animal, as a frog, rabbit, dog, turtle, &c. is detached from the body before organic life is extinct, and placed upon a table, it continues to act, and each contraction elevates the apex. Hence it is unquestionable that the muscular fibres have an inherent faculty of producing this action. The manner in which the action is accomplished is very visible on inspection. During the state of relaxation, the heart lies collapsed and flattened, with a large extent of its under surface applied to the table; on contracting, it starts up, and assuming a more rounded form, is sustained by a comparatively small point of contact. The apex is, consequently, elevated, and the elevation is greater in consequence of the base, from its superior weight, being the more fixed part. The action is closely analogous in the living subject."

It must necessarily result, from the anatomical and physiological state of the part, that during the ventricular systole, the broad fibres, contracting towards the aorta and pulmonary artery in front, draw the tense and rounded body of the ventricles upon the auricular sinuses behind. From this it follows, that the apex of the ventricle is tilted up, the rapidity of the motion depending on this, that "the apex is the long arm of the lever, the auricles being the fulcrum, and the moving power at the aorta and pulmonary artery." The elevation of the apex is aided by the retropulsion of the auricular valves, "for, as these act on a column of fluid, which offers a resistance greater than the weight of the heart, the action is reflected on the organ itself, and impels it forward."

Several causes are assigned by Dr. Hope for the diastole of the ventricles. 1. That power of the muscle, (whether elasticity or something more, he considers unimportant,) by which it reverts from the state of contraction to that of relaxation, and in virtue of which it exercises a degree of suction. 2. The distention of the auricles, which is greater at the moment of the diastole than at any other, as they have been filling during a longer period—that of the ventricular contraction, or half of a whole beat. 3. The weight of the ventricles collapsing from their systole on the distended auricles beneath

them. 4. The width of the auriculo-ventricular orifice, which allows the blood to shoot in with instantaneous velocity. It is manifest, as Dr. H. adds, that so many causes conspiring to effect the influx of the blood, an auricular contraction, at this time, and for this purpose, as imagined by Laennec, would be superfluous. The draught of blood from the auricles during the diastole, causes the slight retraction of these cavities observable at that moment.

Passing next to the examination of the causes and mechanism of the sounds of the heart, Dr. Hope remarks, that Laennec does not offer any explanation of the mode in which these sounds are generated in the natural state, and that even admitting for the sake of argument, that the views of that eminent pathologist respecting the morbid sounds—that they may be produced by the muscular fibres of the organ when they contract *spasmodically*, were correct, such a cause would be totally insufficient to account for the natural sounds, as these are not only different in their character, but beyond comparison, louder than the loudest "*muscular sounds*" that can be produced by any exertion of the most powerful muscles in the body,—a disparity the more striking, as the sounds of the heart are generally louder in direct proportion as the ventricular walls are thinner. Moreover, this cause would not account for the second sound, which takes place during the act, not of contraction, but of relaxation.

Dr. Hope is of opinion, that all the phenomena of the heart's action, both in health and disease, must lead to the belief, that the sound are occasioned by the motions of the contained fluid. The mechanism of their production, he conceives to be, according to the laws of physics, as follows:—

> "When the ventricles contract, an impulse is given to the particles of fluid in contact with them; and this being propagated by collision from particle to particle, generates sound. The irregularity of the interior surface, occasioned by the columnæ carneæ, is calculated to favour this formation of sound; for, on the very first contractile movement, the stratum of fluid next to the surface, and involved in the sinuosities of the columnæ carneæ, is thrown into an infinity of conflicting currents; whence the collision of particles is more extensive and violent, than if it were occasioned merely by a simple direct impulse."

The mechanism of the second sound, or that of the ventricular diastole is, he thinks, more simple, and consequently more uniform in its character. When the diastole takes place, the blood put in motion by a number of concurrent circumstances, shoots with instantaneous velocity from the auricles into the ventricles; and the cause of the loud, brief and clear sound is referred to the reäction of the ventricular walls on the particles of the fluid when this course is abruptly

arrested by the completion of the diastole. Dr. Hope denies in positive terms, that the auricles contribute in any degree to the production of either of the sounds, having found, in some of his experiments, that these sounds were heard in equal perfection when the auricles were in a state of immobility, and that the contraction of these parts, in large animals at least, is too inconsiderable to produce any sound whatever.

By hypertrophy, the impulse is increased and the sounds are diminished. The causes of these modifications, agreeably to Dr. H.'s theory, are very intelligible. The power of the impulse is increased in direct ratio to the hypertrophy; and the movement is a progressive heaving, because the hypertrophous ventricle contracts slowly and with a gradual progression. For the same reason the first sound is diminished—the impulse communicated to the contained fluid not being sufficiently smart to occasion more than a dull, stifled sound, if any at all. As regards the second, he remarks that it is dull and weak, because the unyielding thickness of the ventricular walls renders their expansion by the fluid more difficult and gradual; consequently the reäction generating the sound, is more languid. In extreme degrees of hypertrophy, when the cavity is contracted, the sound becomes extinct, not only in consequence of the more violent operation of the same causes, but also of the less copious influx of blood. By *dilatation*, the impulse is diminished—often rendered imperceptible. When perceptible it communicates a brief shock to the thoracic walls, but has not power or duration enough to elevate them, because as a thin muscle has less power, but greater facility and rapidity of motion than a thick one, the attenuated ventricles contract on their contents with greater velocity than natural, but their action is more feeble; accordingly, the impulse is diminished and its power is sooner exhausted—whence the brevity of the shock. In dilatation the first sound becomes loud, brief, and clear, like the second, owing to the impulse communicated to the blood being smart though feeble, and to the tenuity of the walls facilitating its transmission from the interior of the ventricles. The first sound in this disease is not prolonged, as in the healthy heart, by the currents of fluid converging to the ventricular orifices, because the currents are too sluggish to occasion sound. The second sound is in like manner increased; because the quantity of blood entering the ventricles during their diastole is probably augmented, and, from the thinness of their walls, the check is more sudden. When the heart is affected with hypertrophy and dilatation combined, the modifications occasioned are compounds of those of the two morbid alterations we have just noticed.

On entering upon the subject of morbid murmurs occasioned by valvular disease, Dr. Hope recapitulates the circumstances under which they occur, for the purpose of showing that they assimilate with and substantiate the views he has taken of the heart's action. He remarks that when the aortic, or the pulmonic valves are contracted, a morbid murmur accompanies the sound of the ventricular systole; and when the valves, not closing accurately, admit of regurgitation, a murmur accompanies the sound of the ventricular diastole also; but in this case it is very slight and brief, because the swift influx of blood from the auricle during the diastole, almost instantly puts an end to any regurgitation capable of producing sound.

"When the *mitral* or the *tricuspid* valve is contracted, a murmur accompanies, and sometimes entirely supersedes, the second sound, being occasioned by the obstructed passage of the blood from the auricle into the ventricle during the diastole of the latter. When the valve, not closing accurately, admits of regurgitation, a murmur accompanies the first sound. This fact was one of the very few overlooked by that wonderfully accurate observer Laennec."

Dr. Hope is of opinion that valvular murmurs are occasioned by collision of the particles of the blood, when, by any cause, this fluid is thrown into preternatural commotion during its passage through the orifice of a cavity.

"Obstruction of a hard, rugged kind, as ossifications, occasion louder murmurs than smooth obstructions, because they more completely break the current of the blood. Murmurs are not, as it is often supposed, louder, cæteris paribus, in proportion as the valvular contraction is greater. On the contrary, the loudest murmurs are produced by a moderate contraction, and they become weak when it is extreme. Thus, a rugged osseous concretion, the size of an ordinary pea, in the aortic orifice, I have found to produce the loudest possible murmur; whereas, a contraction of the mitral or tricuspid valve to the size of only two, three, or four lines in diameter, I have frequently known to occasion little or no murmur. Osseous asperity alone, without contraction, produces considerable murmur. From the above premises, it may be stated as a general principle, that the loudness of a murmur is in proportion, not only to the roughness of the obstacle, but also to the quantity of fluid transmitted through the valve and put in preternatural commotion by the obstacle. The effect we should naturally expect to be aided by the force and velocity with which the fluid is impelled; and, accordingly, we find, that when the ventricle is hypertrophous, or the circulation hurried, the murmur is proportionally louder. A simple illustration of these doctrines may be obtained by employing air instead of fluid, as the sonorous medium. Thus, if air be blown with equal velocity through a large and a small orifice or tube, the sound is louder than the former. If the velocity be increased, the sound is proportionably augmented, and it is, cæteris paribus, always louder when the tube or orifice is rough or unequal."

A contraction of the mitral or tricuspid orifice to the size of the

natural aortic or pulmonic orifice generally produces a murmur, owing, as Dr. H. imagines, to the different configuration and position of the arterial, and the auriculo-ventricular orifices. A slight patescence of the valve admitting of regurgitation, which generally produces a loud sound, may result from a structural lesion not sufficient to present an obstacle to the blood flowing in its natural direction from the auricle into the ventricle, and explains a phenomenon often observed by Dr. Hope, that a murmur from regurgitation sometimes accompanies the first sound, when none attends the second.

"A slight contraction, indeed, such as, for example, to diminish the circumference by a quarter, or from that to half an inch, does not, unless accompanied with ruggedness, occasion any appreciable murmur with the second sound; for the blood has little sufficient space to pass with tranquillity; but if, at the same time, the ventricle is dilated and hypertrophous, a considerable murmur may be created; for the increase of the quantity and velocity of the blood which enters from the auricle, produces the same effect as a greater degree of contraction of the orifice."

Dr. Hope was led to notice, in a case which presented itself to him in 1825, and an account of which will be found in the London Medical Gazette for September 5, 1829, that murmur was produced by a disproportion between the cavities and orifices consequent on enlargement of the former. This effect on the first sound, the one to which he has now reference, is of frequent occurrence in cases of great hypertrophy with dilatation. Dr. H. attributes this effect partly to the increased quantity and force of the blood expelled by the ventricular systole, but principally to the changed form of the ventricle.

"For, as in hypertrophy with dilatation the cavity is more spherical than natural, and its artery consequently rises more abruptly with respect to its internal surface, the currents of blood reflected from its sides meet in the orifice at more obtuse angles, and thus, by their collision, not only give rise to the murmur, but impede each others passage into the vessel. For the latter reason, the pulse is sometimes small and weak, when the impulse of the heart is violent—a paradox with which authors have been much perplexed."

Every physician conversant with auscultation must be aware that murmurs independent of organic disease are frequently noticed in the heart as well as in the arteries. It is also known that Laennec admitted, that the bellows murmur might accompany the *diastole* of the heart and of the arteries, and is connected with them in such a way as to replace and entirely annihilate their natural sound.

"So that, at each diastole, the ventricle, the auricle, or the artery in which the phenomenon takes place, yields a distinct sound of a puff of the bellows, the noise of which ceases during the systole."

The same distinguished pathologist remarked that the perfect simu-

litude of the intermittent *muscular sound*, and of the bellows murmur of the heart and arteries seemed to prove that the latter is referable to a real spasmodic contraction of these organs; adding that purring tremor of the arteries probably depends upon a particular modification of the nervous action, (innervation;) the three phenomena, bellows murmur, purring tremor and the thrilling pulse, being attributable to different though analogous modifications of the actions of the arteries and the heart. To the whole of this view of the mechanism and nature of these murmurs Dr. H. objects. He remarks that the bellows murmur takes place synchronously in the heart and arteries, and that consequently it cannot occur during the diastole of both; since the diastole of the one coïncides with the systole of the other. He maintains that this murmur cannot coïncide with the diastole of the cavities of the heart, as it is not possible that a murmur of the ventricular diastole can replace or destroy the natural sound of its systole, the two sounds being consecutive, not simultaneous.

"Nor is it possible that the auricular diastole could occasion murmur; for we have seen in the antecedent experiments, that this motion has not sufficient latitude to occasion any sound whatever."

But Laennec's theory is irreconcileable with his own explanation of the cause of the phenomena in question; for—

"If spasmodic *contraction* be the cause of the bellows murmur, this murmur cannot take place during the diastole of the heart, which, according to the best authorities, is an act of relaxation." "Neither will spasmodic contraction account for the bellows murmur in the arteries; for the murmur takes place during their diastole, not during their systole."

Dr. Hope affirms, that he has found the bellows murmur accompany the *systole* of the ventricles, and not the diastole, unless it, at the same time, and in a predominant degree, attended the systole.

"In the arteries, it coïncides with their diastole. The purring tremor occurs at the same moment, and is a result of the same cause. The arterial thrill is nothing more than a less degree of the purring tremor."

He adds that both by experimental and pathological evidence, he has been led to believe, that the murmurs and tremors, as well in the heart as in the arteries, are occasioned by modifications in the motion of the fluid. To establish this he reminds his readers, that a bellows sound is produced by the transmission of a fluid without an intermixture of air; and adds, that in the experiments he tried, he found the sound to vary in intensity according to the velocity with which the fluid is propelled—to be increased by bending the tube at an angle, and to be still further increased, but also modified, by the admission of air. He hence attributes the sound to the friction; in other words,

to the collision of the particles of fluid against the sides of the vessels and against each other, producing vibrations of a certain rate of rapidity.

2d. He next shows, that in cases in which the sounds in question occur in the heart and arteries, this phenomenon arises from an increase of friction depending on modification of the motion of the blood —resulting from diminished quantity of that fluid or increased irritability of the heart. Being engaged with Dr. MARSHALL HALL in a series of experiments on the effects of loss of blood, Dr. Hope took the opportunity of studying the stethoscopic phenomena of the circulation under all the circumstances of collapse, reäction, &c. Eight or ten dogs were blooded more or less frequently, from one to ten or twelve times, and at intervals varying from twenty-four to seventy-two hours. The result was, that exactly in the ratio of the fluid evacuated, within certain limits, was the sawing murmur noticed over the heart; the hissing bellows murmur being, at the same time, distinctly heard, when the stethoscope was placed over any considerable artery.

"The phenomena underwent the following changes in correspondence with changes in the circumstances. The animals being extremely nervous and irritable, the pulse was instantly accelerated ten or fifteen beats per minute by the slightest excitement, as that of being moved or startled; and the murmur and jerk sustained, in consequence, a remarkable increase." "A collateral circumstance, which may probably favour the production of murmur and tremor, is the attenuation of the blood: for its particles, having lost a proportion of their lubricity, are better calculated for rapid motion, and consequently for the production of murmur and vibration by the collision against each other and against the walls of the containing vessel."

To establish, in a still more conclusive manner, his views relative to the mechanism of the phenomena in question, Dr. H. endeavours to show, that the explanation he has offered applies equally, whatever be the circumstances under which the sounds occur, and that where the sounds *do* occur, they are attended, to a greater or less degree, with a jerking action of the heart and arteries analogous to that which has been described. With this view he points out the diseases and classes of individuals in which the bellows murmur usually prevails;—pericarditis and adhesion of the pericardium; individuals who are under the influence of reäction from excessive loss of blood, whether by the lancet or by hæmorrhage; and young people of plethoric habit and delicate, irritable temperament, subject to hysterical and hypochondriacal affections and to nervous palpitations.

"In such the murmur may come on whenever the circulation is excited, and for exciting it, the most trivial causes are sufficient."

"It may be remarked, in conclusion, that the purely inflammatory pulse, though more or less quick, full, strong, and hard, is not jerking nor attended with bellows murmur. These distinctions, which, to the inexperienced, may appear refined in description, are perfectly familiar to practical men; and it is of great importance to the young practitioner that he make himself intimately acquainted with them, as such knowledge will not only facilitate his diagnosis, but prevent the unnecessary, and often, in nervous cases, pernicious abstraction of blood for imaginary fever or inflammation."

We have now placed before our readers a full analysis of the contents of the first part of Dr. Hope's excellent work, and must postpone to a future opportunity a notice of the remaining chapters. This omission is to be regretted, as many accurate descriptions of disease—many useful pathological views and judicious practical remarks must be, in consequence, left unnoticed. Some of our readers will, probably, feel disposed to censure us for not having dismissed, with a few remarks, the first part of the work, which, as must have been perceived, contains little more than the author's theory on the subject of the sounds and motions of the heart and the application of that theory to the explanation of the phenomena which present themselves in diseases of that organ; and dwelt with minuteness on the succeeding and more practical portions. On this point, however, we must be allowed to entertain a different sentiment. We have ever attached considerable importance to researches of the nature of those which form the subject of the present article; because independently of the fact, that it must be highly gratifying, to physiological inquiries generally, to attain correct views relative to the causes and mechanism of the healthy sounds and motions of so important an organ as the heart; such a knowledge is doubly interesting—nay, indispensably necessary to the pathologist and practical physician; who, without it, are unable to form a just conception of the causes of those sounds and motions, and of the modifications occasioned in them by diseased alterations of the heart, and cannot, therefore, succeed in establishing a correct diagnosis, without which the indications of cure are vague and arbitrary, and the method of treatment empirical. Nor is this the only reason by which we have been actuated. We felt that it would be out of our power, by pursuing a course different from that we have adopted, to do justice to Dr. Hope's masterly volume, because we could not possibly have presented within the narrow limits to which we were necessarily restricted, more than a meagre and unsatisfactory notice of the contents of the various chapters, each of which possesses strong and equal claims to our regard. L.

ART. XIV. *Theoretich-praktisches Handbuch der Chirurgie, mit Einschluss der Syphilitischen und Augen-krankheiten; in alphabetischer ordnung.* Unter Mitwirkung eines Vereines von Aerzten und Wundärzten herausgegeben von Dr. JOHN NEP. RUST, Ritter des Königl. Preuss. rothen Adler-Ordens, Ritter, des eisernen Kreuzes und Kaiserl. Russ. St. Annen-Ordens Zweiter Klasse, &c. Professor der Heilkunde an der Friederich Wilhelms-Universitat, und an der Medicinisch-Chirurgischen Militair-Akademie, &c. &c. &c. Band. 1, 2, 3, 4 and 5. Von A. bis Detractis, mit dem bildnisse der Verfassers. Berlin und Wien, 1830–31. pp. 738, 784, 816, 760.

A Manuel of Theoretical and Practical Surgery, embracing the consideration of Syphilitic affections and Ophthalmology, arranged in alphabetical order. By Dr. JOHN NEP. RUST, Professor of Medicine in Frederick William's University, and in the Medico-Chirurgical Military Academy, &c. &c.; assisted by an association of Physicians and Surgeons. Vols. I. to V.—A to D. Berlin and Vienna, 1830 and 1831.

IN this country, where the invaluable Dictionary of Practical Surgery of Mr. SAMUEL COOPER is so well known and so highly appreciated, it cannot be necessary to point out the immense advantages that are likely to accrue from a work of the character of that which we have announced at the head of this article. Whatever objections may be urged against the Cyclopædaic form, when applied to elementary treatises on the different departments of the sciences, it must nevertheless be admitted, that it possesses an advantage over all others, by admitting the collection, into a small compass, of a greater quantity of important information, than could be conveniently embodied under any other form. Such a plan is particularly advantageous, when the several articles are made to constitute complete monographs, in which are condensed the sum of our information on the subject of which they treat, drawn up with care, and by individuals justly entitled to confidence. The present undertaking, therefore, bearing as it does the name of Rust, an individual already extensively known as one of the most distinguished of modern surgeons, aided by collaborators of established reputation, cannot but be hailed by the votaries of surgical science, as furnishing an important acquisition to their sources of instruction. Of the proposed extent of the work in question we can form no accurate opinion, as we have as yet only received five volumes; but judging from the small portion of the alphabet which is comprised within that compass, there is every reason to infer that the plan of the author is

intended to embrace a wide range, and to include every thing of interest appertaining to surgical science.

In our review of the volumes which are before us, we shall be obliged to restrict our attention to a few of the leading articles which they contain, as an examination of the entire range of subjects would require much more space than can be appropriated to their consideration.

The articles devoted to the consideration of extirpation of enlarged tonsils, of the uvula, and the tongue, furnish a good exposition of the rules that should be observed in the performance of those operations, and of the cases in which they should be resorted to. In the extirpation of the tonsils and tongue, the operation by the knife, or scissors, is recommended in preference to that by ligature, and with good reasons in its favour. Although the operation may be executed with perfect safety by the latter process, it is almost always attended with pain and much inconvenience, and it not unfrequently happens, that several days elapse before the part which has been included in the ligature drops off, during which time the individual is distressed beyond conception by enormous swelling of the tongue and fauces, profuse salivation, difficulty of respiration and deglutition, and sometimes with inability to sleep, or remain even in a recumbent posture. We once attempted to remove a large tumour from near the root of the tongue by this operation, and although its base, which was broad and solid, was transfixed by a needle and double ligature, and the latter drawn firmly round it on each side, we were eventually obliged, after our patient had been submitted to extreme suffering of three days continuance from the above symptoms, to complete the operation with the scissors. No hæmorrhage of consequence ensued; the inflammation and salivation quickly subsided; and at the end of a week the individual returned home perfectly well. We conceive, indeed, that the danger of hæmorrhage, from the employment of the knife, has been greatly exaggerated; but be that as it may, we would rather hazard its occurrence, and trust to the ligature and cautery for arresting it, than to submit the patient to the inconvenience and suffering which are apt to arise from the ligature. Should those means not be found adequate, the author recommends to secure the lingual artery where it courses along the cornua of the os hyoides.

Abscessus, *Apostema, (die Eiterbeule, der Abscess.)*—The subject of abscess is one of great importance to the pathologist and surgeon, and is ably discussed in the article devoted to its consideration.

"An abscess," says the author, "is a manifest cavity, formed in some part of the organic tissues, containing pus or an analogous pathological fluid, which its walls continue to secrete until the cavity is obliterated." Band. I. p. 54.

Every abscess therefore, whatever its situation, he very correctly represents as a temporary secreting organ, elaborating a peculiar animal fluid, which is incapable of contributing any plastic materials to the organism, and is therefore thrown off as extraneous matter. The fluid contained within an abscess presents considerable diversity of character, according as it is developed in the skin, the glands, the lungs, brain, &c.; and, moreover, exhibits different grades, when considered in relation to its vital properties and its affinities with blood, from the condition which constitutes healthy or laudable pus, down to a mere lymphatic fluid or sanies. Notwithstanding the careful researches of Hunter, Darwin, Salmuth, Grasmeyer, Brugmanns, Home and others, no certain criterion has yet been furnished, by which this fluid can be accurately distinguished, nor are we indeed likely to acquire one, as has been correctly remarked by Walther, which can be relied on as perfectly characteristic, so that in practice, the only points of importance to be observed are, its various degrees of coagulability, the presence or absence of its globules, the nature of the flocculi which are commingled with it, together with the influence it exercises on the living organism. Good healthy pus is that which possesses the strongest affinity with the properties of the blood, and, consequently, that which is best adapted, by its plastic qualities, to contribute to the restorative process; that on the contrary, which is thin and sanious, instead of facilitating the acts of restoration, generally tends to hasten the work of destruction, and is therefore regarded as unhealthy. There are a great variety of circumstances which tend to impart to the contents of an abscess these latter properties; as for example, a feeble or unhealthy form of inflammation; the long retention of the matter after it has been formed, by which its properties become modified; the condition of the organism by which it is elaborated; the influence of the scrofulous or venereal diathesis, and numerous other conditions which have a tendency to prevent the secretory process, by which the pus is separated from the blood. p. 56.

The successive changes attending the development of an abscess, and the condition presented by the cavity after it is formed, as well as the different acts by which it is obliterated, are very well described by the author.

"The pathological secretory process, by which an abscess is developed, should be considered as consisting in some modification of the plastic acts of the part excited, in most cases, by a degree of inflammation more or less intense, which, however, is sometimes not revealed by any external manifestations, and is perhaps, in some instances, entirely wanting. In the latter case,

it is probable that the system is, as represented by Walther,* affected with a genuine *purulent diathesis*, in virtue of which the pus is elaborated in the blood-vessels themselves."

While we concur fully in the leading points of this explanation, we are not disposed to yield our assert to the assumption, that an abscess may be formed without preëxisting inflammation. We are satisfied, on the contrary, that that act, in all cases, constitutes an indispensable antecedent condition, though we are ready to admit, that large deposits of matter are occasionally made in parts, in which no inflammation preceded; yet that matter must, in the first place, have derived its origin from the changes induced by inflammation in some remote part. This is exemplified in what are called abscesses by congestion, in which the pus frequently travels some distance in the interstices of the tissue, previously to arriving at its point of accumulation. We are equally averse to admit the existence of the purulent diathesis of Walther, although a similar hypothesis has been espoused by respectable pathologists. The molecular modifications which the blood undergoes in the formation of pus, take place in the situation of the inflammation itself; are the result of influences impressed upon that fluid by the inordinately excited solids with which it is then in relation, and never occur in remote situations, while the blood is moving quietly in its ordinary circuitous round, and uninfluenced by inflammatory action.

"If the anatomical characters of an abscess be examined, before the full development of the suppurative process, the middle of the tumefaction will be found distended with an inordinate quantity of blood, injected into the interstices of the cellular tissue, interspersed with which we shall observe a few points of purulent matter, the number of which are hourly increased. This fact, which has been fully established by the researches of Beclard, Prevost, and Dumas, Vacca, Allan, Wilson Philip, Laennec, and Gendrin, demonstrates, on the one hand, that the development of the cavity of the abscess is owing almost exclusively to a distention and forcing asunder of the fibres and laminæ of the cellular tissue, by the accumulation of the fluid, and on the other, shows the intimate relationship between the blood and the purulent matter, and the facility with which the one is transformed into the other." p. 56.

These changes are well exemplified in those abscesses which form in transparent parts. They are at first almost entirely filled by blood; the quantity of pus, however, increases progressively, and in proportion as it becomes more abundant, the blood disappears, unless, as is sometimes the case, the intensity of the inflammation continues such as to keep up great determination of blood, or becomes greatly exas-

* Abhandlungen aus dem gebiete der Prakt. Med. Landshut, 1810.

perated during the progress of the disease, so as to precipitate, as it were, a new influx upon the diseased point. Under such circumstances, we find the contents of the abscess commingled with a large proportion of blood throughout every period of the disease, or if they have already become purulent, the new attack of inflammation will again impart to them the bloody character.

"The contents of abscesses are, with only a few exceptions, surrounded by a delicate membranous cyst, which lines the parieties of the cavity. This membrane is particularly manifest in acute abscesses, is seldom wanting in those of a chronic character, and is very well developed in large lumbar abscesses, as has been well shown by the investigations of BICHAT, RICHERAND, VILLERME, BECLARD, LANGENBECK, COOPER, GENDRIN and others. The frequent occurrence of this character induced SAUVAGES to designate those abscesses, in which it exists, cystis purulenta. Where the cyst is wanting, its development is generally prevented by an inordinate depression of the powers of life, as in the gangrenous and pseudo-erysipelatous abscess, or by a too rapid diffusion of the purulent matter beneath the aponeuroses and tendinous expansions." p. 57.

This membranous sac consists, at first, of a simple deposite of coagulable lymph, which, as it becomes solid, exhibits a delicate flocculent aspect. In proportion, however, as the process of organization advances, this coagulable lymph assumes more and more of the character of a pseudo-membrane, and finally becomes a complete membranous cyst, or investure, by which the matter of the abscess is circumscribed, and prevented from being diffused throughout the adjoining cellular tissue. Our author supposes that this cyst is formed in part by the plastic powers of the pus itself, and in part by the reaction of the adjacent cellular tissue and other structures, the plastic powers of which are exalted, to throw off the pus or the contents of the abscess, which acts upon them in the same manner as a foreign substance. This is doubtless true, as a general rule, but it is unquestionably equally true, that in many cases the pus possesses no such plastic properties, and it necessarily follows, that in such instances the whole of the process must be accomplished by the acts of the adjacent capillaries, and the tissues which they permeate. But be this as it may, it is stated by our author, that the membranous envelope in question generally retains a character of great delicacy, while it is completely excluded from the contact of atmospheric air, but when exposed for a length of time to that influence, it becomes red, more vascular, is increased in thickness, and often assumes the consistence of fibro-cartilage. This is seen in the membranous cysts which are found lining tuberculous excavations in the lungs, especially when they are contrasted with those which line a common abscess, yet we

have seen some cases of chronic abscess of very long standing which have exhibited a membranous lining possessing all the properties adverted to, although the atmosphere has had no access to them. But whatever may be the extent of the modifying influence of such causes, certain it is, that this membrane possesses, not only an important agency in the development of the abscess, but also in its removal; for performing, as it does, the double office of secretion and absorption, and being at the same time possessed of a considerable degree of contractility, whenever the activity of its recurrent function is diminished, while its faculty of absorption remains unchanged, or is augmented, the resistance being in part overcome by the diminution of its distention, it contracts upon its contents; the capacity of the abscess is gradually diminished, and is eventually entirely obliterated by a cohesion between its parietes.

We shall pass over the observations of the author relative to the diagnosis of abscesses, to notice the different varieties into which he divides them. These divisions are founded principally upon the causes by which they are induced, their tendency to heal, the different states of the organism under which they are developed, and their situation.

Under the first head we have those which are called idiopathic, or which arise from the simple acts of the organism under the influence of common causes; as, for example, common inflammation, the irritating influence of chemical and mechanical irritants, &c. and those which are designated sympathetic, and which are dependent upon constitutional causes. These are subdivided by the author into constitutional, rheumatic, syphilitic, and abscesses by congestion. (*A. constitutionalis, A. rheumaticus, A. syphiliticus, A. par congestionem.*)

In relation to their sanitive tendencies, they are divided into benign or suppurative, when they contain healthy pus and are disposed to heal, and into the ulcerative and gangrenous, when their contents are unhealthy or sanious, and when they are disposed to spread by the process of ulceration and sloughing.

When they are accompanied with an exalted condition of the vital activity of the organism, they are called acute or phlegmonous; but when they occur under an opposite condition of the system, they are designated cold or chronic abscesses.

They are, moreover, divided, according to their seat, into superficial, profound, and occult, and into external and internal, according as they occupy the superficies of the body, or some of its internal parts, as the liver, spleen, prostate, head, neck, &c. p. 63.

In the treatment of abscesses regard must be had, according to the author, to the condition of the system, and the character of the local affection. The curative procedures must, therefore, be divided, according as they are applicable to the abscess itself, or to the disturbance which it occasions in the general system. The constitutional treatment must of course be conducted upon general principles, but the local must be modified according to the activity of the vital forces of the structures concerned in the development of the abscess, the seat and course of the disease, and its extent and duration. From these considerations may be deduced the following indications.

"1. To regulate the processes of inflammation and suppuration, which constitute the source of the abscess.

"2. The evacuation of the pus.

"3. The management of the secreting surface of the abscess.

"4. To subdue the various complications which may happen to exist." p. 67.

In relation to the first indication, it will be proper, in some cases, to endeavour to disperse the tumour, and thereby to prevent the development of suppuration; while in others, the process of suppuration should be promoted by appropriate measures. The first of these objects cannot always be accomplished, yet there are particular circumstances which render it an object of great importance, as for example, when the inflammation is seated in the eye, the prostate gland, in the vicinity of the anus, &c. where the development of suppuration would either destroy the organ, or give rise to fistulous ulcers difficult to heal, or other mischievous consequences. In many abscesses by congestion, moreover, our author thinks that a cure is as well, or even better accomplished, by promoting the absorption of the pus, than by making an opening for its evacuation; an inference which, although correct to a certain extent, is certainly not borne out when applied to many abscesses of that character.

On the other hand, the process of suppuration should be promoted where the abscess is healthy; where it is placed in a situation which does not endanger any important organ, or in which it is not likely to give rise to any formidable consequences; where it evinces a disposition to become speedily matured, or where the suppurative process will have the effect of dislodging some extraneous body.

There are several means, both general and local, which possess the property, not only of keeping back the process of suppuration, but also of overcoming it, under some circumstances, even after it has become established.

Amongst these, one of great importance is local blood-letting, by

which the inflammation may be generally subdued before the suppuration is fully established. As contributing to the same end, the author recommends the employment of drastics, and such means as are calculated to promote absorption, and excite a revulsive impression; as frequently repeated, and full doses of calomel, a succession of emetics, abstinence, nauseating doses of antimony, warm bath, &c. As local applications, cold will, in many cases, be found highly useful; but in some instances the employment of warmth, in form of cataplasms or fomentations, will be found more beneficial. Various stimulating applications are also employed in form of friction, plaster, lotions, &c. and sometimes when there is not much inflammation, with a salutary result.

"Of these, the best are a solution of muriate of ammonia in vinegar, applied warm; the emplastrum resolvens Schmuckeri, the emplastrum mercuriale, a mixture of 4-8th emplastrum diachylon compositum; 3-8th emplastrum mercuriale, and 1-8th emplastrum cantharidum ordinarium; a mixture of tart. emetic, of emplastrum diachylon, emplastrum meliloti, and emplastrum oxycroceum; the emplastrum cantharid. or the application of a piece of cautic, so as to produce an eschar; onions, salt, mustard, horse-radish, and other stimulating applications. A red hot iron held near the part, so that its electric rays may fall full upon the tumour, is a most powerful discutient measure."

The author has omitted to mention the various preparations of iodine, which have been found, in modern times, the most efficient means of accomplishing the objects under consideration. We have also seen a cup drawn over the surface of the tumour, produce a happy effect, and in some instances accomplish the resolution of the disease in a short time. The continuous application of a bladder, filled with pounded ice, will sometimes accomplish our object much more effectually than all the stimulating plasters detailed above.

When the object is to encourage the maturation of the abscess, care must be taken not to reduce the inflammation below the proper point; but when it is too feeble, such measures should be resorted to, as will be calculated to give to it the requisite degree of activity. The best applications, under ordinary circumstances, are such as are calculated to retain heat and consistence; as emollient cataplasms, composed of linseed meal, bran, oatmeal, bread, &c. made into a poultice with water or milk. Where the pain is very distressing, we may add to any of these poultices, a sufficient quantity of laudanum, poppy heads, cicuta, hyosciamus, &c. Should the condition of the parts be such as to require an exaltation of their activity, the cataplasms should be rendered more stimulating by the addition of mustard, onions, black soap, &c. Various exciting plasters have

been recommended for the purposes under consideration, as the emplast. diach. E. resinosum, E. ammoniaci, galban. and many others of a similar character.

When the abscess is sufficiently maturated, the matter should be evacuated, but the practice to be pursued under such circumstance, is detailed under the article, "*Oncotomia.*"

When the abscess is of a healthy character, and a free exit has been given to the matter, the case will require but little interference on the part of the surgeon. Most that will be requisite, will be to keep the part in an easy posture, to apply light dressings, and if the orifice should evince a disposition to close too early, to open it with the point of a probe, or where that is impracticable, with a lancet or bistoury. It will seldom be proper to introduce tents, or other irritating means, which are sometimes used under the pretext of giving free exit to the matter, as their presence always proves a source of irritation, and sometimes excites so much inflammation in the parietes of the sac, as to greatly exasperate the disease, and increase the suppuration. In some cases, however, the excess or defect of the inflammation will render it requisite to resort to such means, after the matter has been evacuated, as are calculated to subdue or exalt inflammatory action. When the activity of the part is too great, antiphlogistics will be the appropriate remedies, as the local abstraction of blood, the employment of warm emollient cataplasms, to which a small quantity of opium, cicuta, or hyosciamus, will form a useful adjunct; the application of light pledgets of lint spread with simple cerate, &c.

It happens much more frequently, that the vital powers of the part are too feeble, and require to be stimulated. In such cases, the secretion is generally defective, or is thin and serous, or sanious. In some instances, it will be proper, under such circumstances, to make a free opening in the abscess, and to fill its cavity with dry lint, or with a dossil of lint spread with some digestive ointment, or embued with some stimulating material. Amongst the various substances which may be employed with this intention, the following are recommended by the author; the common digestive ointment, basilicon ointment, the balsam of Frahmius, a solution of caustic potash, of the nitrate of silver, or corrosive sublimate, in camphorated spirits. Fluid preparations of a similar kind may also be injected into the cavity of the abscess. With the same view, a seton or ligature may be drawn through the abscess. The constitutional treatment must be varied to suit the nature of the case, and should be strictly antiphlogistic where the acuteness of the symptoms requires it, but invigorating and nu-

tritious where the powers of life are enfeebled. Under the latter circumstances, a generous diet and a pure atmosphere should always be called into requisition, and as calculated to second their effects, the patient may be put upon the use of tonic medicines, good wine, &c.

This is a brief summary of the doctrines and practice inculcated by Dr. Sommer, a distinguished army surgeon, in relation to the characters and treatment of abscesses. It will be seen that his observations are generally judicious, and his practice such as should be pursued in the management of a majority of the affections under consideration. With regard to treatment, however, he has omitted the consideration of many modifications and details which are often important. To supply this defect, some very valuable reflexions are appended to the article by Professor Rust himself, the learned editor, who has entered more fully into the discussion of some points connected with the treatment than has been done by Dr. Sommer. As however, most of his practical precepts are referable to the several indications laid down above, and will readily suggest themselves to the judgment of the surgeon, we shall not stop to discuss them in the present place. The whole article furnishes a very good exposition of the pathological characters and treatment of the disease, and is highly creditable to its author. We may make the same remark in relation to the several articles which treat of the abscesses that are developed in different parts of the body; as for example, in the abdomen, the glandular system, the neighbourhood of the anus, the antrum, the ear, the head, &c. all of which contain much useful information. That on abscess of the ear by Professor Beck of Frieberg, is highly commendable. He is the author of an excellent work on the diseases of the ear, which we have already noticed in a preceding number of this journal. We shall be more particular with regard to an article entitled *Abscessus Capitis Sanguineus Neonatorum.* This is a form of disease which, although it has been particularly noticed by some pathologists, has been very much overlooked by a large majority of them. Under this appellation, or that of *cephalæmatoma*, the author, Professor Dieffenbach, wishes to describe a sanguineous tumour, which is sometimes developed between the pericranium and the bones of the head of new-born children, and which frequently continues for several days, or weeks after birth. These tumours are, at first, soft and doughy to the feel, but afterwards become tense and elastic, and sometimes seem to be surrounded by a sharp prominent margin, which feels like a ledge of bone. There is at the commencement no discoloration of the skin, but in proportion as it becomes more distended, it acquires a glossy and varnished appearance. The

temperature of the tumour is seldom elevated above that of the head, and when the palm of the hand is pressed upon its surface, a kind of thrilling, or pulsatory sensation can sometimes be perceived. The volume and configuration of the tumour are exceedingly variable; sometimes they are not larger than an ordinary bean, but in some cases they attain the volume of the fist. They are generally convex upon the surface, but are occasionally flat, and diffused over a considerable extent of the superficies of the head. They are in most cases solitary, but in some rare instances several small tumours of the same kind have been met with upon the head of one individual. They may be developed upon any portion of the parieties of the cranium, but their most frequent locality is upon the surface of the parietal bone.

"During the early period of the existence of the disease, the child seems to suffer little or no inconvenience, but as soon as any material changes begin to take place in the tumour, it becomes pale and sickly. Golis reports a case in which a tumour of this kind occasioned considerable stupor. It may, indeed, happen where the tumour is large, and the tension of the cranial aponeurosis very great, that the membranes of the brain, and even the brain itself, may experience more or less compression." p. 120.

With regard to the cause of the disease, and the period at which it takes place, there has been much difference of opinion. It has been by several individuals attributed to difficult labours, to the long lodgment of the head within the straits of the pelvis, and the application of the forceps for its delivery; yet we are informed by accoucheurs of extensive observation, that they have never seen it occur in a case in which the labour had been difficult. Paletta states that he scarcely ever met with it, except after easy labours, and Naegele's extensive experience never furnished him with an instance in which it succeeded the most difficult forceps cases. Osiander very rationally conjectures that they are congenital, or are developed before birth; and the same sentiment is adopted by Siebold, Michaelis, Schmidt, Hoere and others.

But notwithstanding tumours of this kind occasion so little disturbance, during the first periods of their existence, their issue, when they are left to themselves, is almost invariably fatal. The extravasated blood is submitted to the process of decomposition, and becomes converted into a dark-coloured, or brown sanious diffluent putrid gore; the pericranium, which is spread out upon the fluid, is thickened; the corresponding portion of the cranial bone becomes diseased—is sometimes involved in a profound caries, or is completely perforated by absorption; the influence of the disease is communi-

cated to the brain and its membranes, and death sooner or later takes place. Naegele, Kopp, and Osiander, all detail cases in which, from the long continuance of tumours of this kind, a perforation of the cranium, of more than an inch in diameter, was formed. Paletta also mentions a case, in which the outer table of the bone was destroyed, while the inner was perforated by a great number of minute apertures. From the contour of the diseased bone, however, a considerable ossific deposite had taken place, which seemed to manifest a disposition to extend from the circumference towards the centre of the tumour. Chelius has, moreover, described two cases, in which the pericranium, which occupied the surface of the tumour, was remarkably thickened, and transformed into bone, which when firmly pressed, furnished a crepitating sensation, similar to that occasioned by bending an elastic plate of metal. These were regarded by several surgeons as examples of cranial exostosis, but were both cured by laying open the tumours, and evacuating the coagulated blood.

In the treatment of these sanguineous abscesses two leading indications present themselves to the consideration of the surgeon. 1st. To disperse the tumour, where that is possible, by promoting the absorption of its contents. 2d. To give exit to the extravasated blood, and to heal up the cavity of the abscess.

With regard to the means of accomplishing the first, it is needless we should enter into any minute details. Suffice it to say, that slightly stimulating lotions, fomentations, and poultices, will be the best, which must be varied to suit the circumstances of the case. A compress and bandage have also been recommended for the same purpose, but when the tumour is large, we doubt much their efficacy.

Whenever these means have been employed for several days without success, it will be proper to evacuate the blood, and to endeavour to heal up the abscess from the bottom. Some have recommended this to be done by caustic, others by seton; some by a very minute puncture, while several have recommended a free incision, or even the excision of a portion of the walls of the tumour. The first plan has been proposed by Schmidt and Golis; the second by Paletta; the third by Chelius; while Professor Dieffenbach recommends the fourth. As soon as the blood is evacuated, the cavity should be filled with dry lint, or with a small pledget, spread with cerate, with a view of promoting suppuration and granulation. From what we have ourselves seen, we should give the preference to a free opening, as it can occasion no bad consequences, and generally ensures a more speedy cure.

Abscesses of this kind, though most frequently observed in chil-

dren at birth, are not confined to that early period. While on a visit to Charleston a few months since, we had an opportunity, in company with our particular friend, Professor Holbrook, of that city, of witnessing one as large as a common apple, which was situated upon the parietal bone of a youth of five or six years old. It took place spontaneously, at least without any previous injury, and from its general character, we supposed it to be a common purulent abscess, but on plunging a lancet into it, nothing but red fluid blood escaped. The cavity was filled with a tent, and although the blood afterwards evinced a disposition to accumulate again, suppuration and granulation were established, and the part was finally healed. These abscesses are also sometimes developed in other parts of the body. Paletta reports a case in which one of them occupied the tibia, and Dr. Bushe, of New York, treated one, which was situated upon the tarsus. It was connected with caries of the bone, which rendered amputation necessary.*

There are many other articles devoted to the consideration of various species of abscess which we shall be obliged to pass over in silence. Some of them are drawn up with ability, and contain much valuable information.

Amputatio Artuum. (Gliederabsetzung, Gliederablösung.—The accidents and diseases which call for the operation of amputation are so numerous, the proper determination of the cases in which it should be performed often so difficult, and the methods of operating so diversified, that it may be useful to follow our authors in their observations upon each of these points, the more especially, as they have treated the subject in extenso, and have evinced considerable ability in the discussion of the various topics which it involves. The first question we shall examine is—

1. *What are the causes that demand the operation of amputation?*—This is a point upon which there has existed great diversity of opinion. While Boucher, Gervaise, Faure, and especially Bilguer, have restricted the cases in which it should be resorted to, to a very small number, many modern surgeons, some of them we fear actuated by no commendable motives, have recommended and practised amputation in cases in which the member might have been saved by appropriate medical and surgical treatment. Bilguer has been much criticized for interdicting the operation altogether, but we question much if the ills resulting to human nature would be as great by the adoption of that course, although it would unquestionably lead to the

* New York Medico-Chirurgical Bulletin, No. 5.

sacrifice of many valuable lives, than we find daily accruing under the influence of the mania for the performance of operations, by which many modern surgeons are actuated. It is the duty of every surgeon to avoid both these extremes, and only to resort to amputation in those cases in which it is indispensably necessary to the safety of the patient. It is unfortunate, however, that such cases cannot always be with certainty determined, and for the want of definite rules of discrimination, it must sometimes happen, that limbs will be sacrificed which might be saved without an operation, and on the other hand, that some lives will be lost, which might be preserved by timely amputation. The following are the objects laid down by the author as calling for the operation:—

"We resort to the operation of amputation for the removal of such local diseases of the extremities, as are, in the present condition of the science, incurable, or are rendered so by either the external or internal relations of the individual, and which consequently endanger his life, or disqualify him permanently for the offices and enjoyments of existence." p. 538.

The following may, therefore, be regarded as the principal circumstances requiring the operation:—

"1. Where a member is extensively lacerated, or in part carried away by external violence, as for example, by a cannon-ball, by machinery, &c., in which cases as the extent of the laceration, the irregularity of the surface, the projection of the bones, the tendency to gangrene, and other circumstances, will render it impossible to effect a cure, it will be necessary to convert it into the nature of a simple wound, by resorting to the operation of amputation.

"2. Where, by external violence, the bone of the member is so extensively splintered, and the soft parts are, at the same time, so much contused and lacerated, as to render their restoration impracticable, death from gangrene and sloughing can only be prevented by the removal of the injured member.

"3. Where the bone is uninjured, but where the soft parts, and especially the important vessels and nerves are torn, or extensively contused, amputation affords the only means of preventing the development of gangrene, and the consequent death of the individual.

"4. Where a cannon-ball, or large shot, strikes one of the members obliquely, so as to violently contuse or lacerate the deep-seated soft parts, to tear the vessels and nerves, shatter the bones, &c., without materially injuring the superficies of the limb, the life of the patient can only be saved by a timely resort to amputation.

"5. Amputation will also be necessary in those cases, in which a considerable articulation, especially the knee or the elbow, sustains a violent injury, by contusion, a laceration of its ligaments, from a violent dislocation, fracture or crushing of the articulating extremities of the bone, the tearing up of the soft parts of the joint, with an escape of the synovial fluid, the extravasation of a considerable quantity of blood within the capsule, together with other formidable injuries of its structures. If the operation be not performed under such

circumstances, the patient will be destroyed by violent inflammation, and suppuration, caries, gangrene or tetanus.

"6. In those cases in which either from a wound, from the influence of disease, or the ravages of extensive suppuration—from gangrene, an aneurismatic condition of the large arteries or veins, an alarming hæmorrhage ensues, which on account of the inaccessable situation of the artery, or its peculiar condition, cannot be arrested by the usual means, amputation will present the only chance of saving the life of the patient.

"7. When a profound metamorphosis, or extensive degeneration of the structures of one of the extremities takes place, as for example, an extensive pseudo-erysipelas, large encysted and fungous tumours, elephantiasis, aneurisms, with an extensive destruction of the adjacent parts, and these endanger the life of the patient, either by their influence on the constitution, or their local ravages, amputation furnishes the only means of preserving the individual against destruction.

"8. The same is true, where similar transformations, or degenerations, seize upon the bones in such a manner, that the disease cannot be removed by the extirpation of the affected bone itself, or where they give rise to a transformation of its substance into a sarcomatous, encephaloid mass, or involve it in a profound destructive process, as in caries, &c.

"9. Also in incurable diseases of the joints. (Tumor albus, arthrocace, arthropyosis neglecta, &c."

These may serve very well as general rules, but it may occur to every individual, who is engaged in extensive surgical practice, to witness the preservation of both life and limb under several of the conditions which have been enumerated. Yet such success should rather be considered as constituting exceptions to a general rule, than as militating against the justness of the rules themselves; for, as the author very properly observes, we may sometimes obtain a single successful issue without the operation, at the expense of ninety-nine victims, sacrificed to an omission, or rejection of it. It must be confessed, however, that it is impossible to prescribe rules which shall be applicable to all cases. Every one possesses some peculiarities, and all that can be done is to lay down general axioms, and leave their application to the judgment and discretion of the practitioner.

There are, besides these, some other conditions under which amputation may become necessary, and which have been considered by some surgeons as always calling for its employment. The following circumstances are detailed by our author, as sometimes demanding the operation.

"10. Where, from the situation of the patient, or the nature of his disease or injury, the means necessary for the preservation of the member cannot be commanded; as for example, on the field of battle, or during a retreat, when an individual has received a complicated fracture, a severe penetrating wound

of an important articulation, and proper remedies or dressings cannot be obtained, or where the means of transporting him to a convenient situation for conducting the treatment, are not at hand. In such cases, amputation will sometimes become necessary to save the life of the patient, although he might, under favourable circumstances, be cured without it.

"11. When an injury or disease is of a nature not to endanger the life of the patient, but to admit of cure, but only by leaving the member in such a state as to render it altogether useless; as for instance, by the development of an artificial joint; and

"12. In those cases, in which a member is so circumstanced or distorted, as to render it a source of great inconvenience to the individual, as an anchylosis of one of the extremities, which is, at the same time, so flexed or extended, that it interferes materially with the offices of life; an artificial joint implicating the lower extremities; or distortion of the fingers, &c." p. 540.

We doubt much the propriety of amputating merely for the removal of an artificial joint, more especially as the resources of surgery furnish means, which are amply adequate, at least in a majority of cases, to overcome the disease, and restore the utility of the member. The seton, the cautery, the excision of the extremities of the bones, &c. should always be tried first, and we are of opinion, that the number of cases in which some one of those remedies will not succeed, will be found exceedingly rare. We should also weigh well all the circumstances before we resort to amputation merely for the removal of an anchylosis, or a member attended with distortion. It should always be borne in mind, that the operation may occasion the death of the individual, and the inconveniences incurred by such a condition, though frequently very great, are seldom so considerable, that a removal of them should be purchased at so much hazard. We have known an individual lose his life by a surgeon, yielding to his solicitations, and performing the operation under such circumstances, even though the state of his constitution was such as to furnish every prospect of a successful issue.

Gangrene has, at all times, been considered as a condition calling for amputation, especially under some circumstances which frequently attend it. Our author, however, observes, that gangrene itself can never demand the operation, which is only required by the consequences to which it gives rise. It will never be proper to amputate while it is yet in its forming stage, inasmuch as experience hath shown, that many cases can be cured by appropriate treatment, without sacrificing the member. When the death of the part is fully established, and the process of destruction is still progressive, our author affirms, that the operation has no power to arrest it, but may, on the contrary, hasten its extension, by the injury it inflicts on the

organism; and should the mortification be fully arrested by the establishment of a line of separation between the dead and the living parts, the operation cannot be necessary; because the powers of nature are sufficient to throw off the mortified portion of the member. As, however, it will frequently happen, that after the dead parts have separated, the remaining stump will be so uneven, or the bone will project so much, as to render it impossible to cicatrize its surface, amputation will become necessary, to form such an one as will admit of being healed. Under such circumstances, therefore, the operation should be resorted to, as soon as a distinct line of demarcation shall have been formed, provided the condition of the patient, in other respects, does not contraïndicate its employment, because by waiting for the complete detachment of the soft parts, and especially the bone, he will be submitted to an unnecessary degree of irritation and suffering. In those cases, moreover, in which the gangrene is so extensive as to render it impracticable to save the member, and a profuse hæmorrhage takes place from the main artery, it will be better to amputate at once, than to cut down above the seat of the injury, with a view of securing the vessel, as the former operation will be eventually necessary, and it will, of course, be improper to submit the patient to the double suffering and danger of also performing the latter.

We fully concur with the author in objecting to the operation for the removal of tetanus. The injury is no doubt the cause of that disease, but it only proves instrumental in its development by irradiating its influence throughout the nervous system, and by giving rise to a pathological state of some portion of the nervous centres, which cannot be removed by the amputation, although by resorting to that operation, we can readily remove the injury by which it was excited. We are aware that this disease has been laid down by many respectable surgeons as furnishing an indication for the operation, and we have seen it practised, under such circumstances, a considerable number of times, but in every instance it has failed to arrest the disease.

II. *At what period should the amputation be performed?*—This is a question on which the sentiments of practitioners have been much divided, nor is it an easy matter to furnish an answer, which can be adopted as a general rule of practice, so numerous and diversified are the conditions and complications attending the cases which require the operation. The principal difficulty exists, however, in relation to recent injuries in which amputation becomes necessary, the decision being much easier in chronic cases, when the ability of the

patient to endure it, and the condition of the wound, are the principal circumstances demanding attention. The following is laid down by the author as a leading principle to be observed in determining this question.

"The operation should be resorted to at a time when the general system is not affected with any general disturbance, which, by becoming complicated with the consequences of the operation, might tend to excite a dangerous degree of reäction. As, therefore, a general disturbance of this kind, a violent sympathetic inflammatory fever, for example, is a necessary consequence of all extensive injuries, it will be proper to amputate either before the fever is developed, or to delay the operation until the inflammation is subdued." p. 543.

At the time of the reception of the injury, the vital powers generally sustain such a shock, that to amputate before they are rallied from the state of oppression with which they are overwhelmed, would be to destroy the patient. In most cases, however, where the surgeon is asked to amputate under such circumstances, there will be a period between this state of oppression and the inflammation, which sooner or later supervenes upon it, at which the vital forces have sufficiently reäcted, to admit of the operation being performed with safety. If, however, this juncture be allowed to pass by, and violent inflammation with great disturbance of the general system has taken place, it will be unsafe to operate until the organism has been reduced by appropriate treatment, to obviate the hazard which would otherwise arise from the additional shock inflicted upon the organs by the operation. A contrary course is too often adopted, especially on the field of battle, and the melancholy consequence is, that a large proportion of those who are subjected to amputation, fall victims to this improper practice. We do not think of performing an operation on the eye, when that organ is affected with inflammation, nor, indeed, to submit an individual to any other important operation, without having first prepared the system by appropriate treatment; yet many surgeons, losing sight of this important rule of practice, do not hesitate to jeopardize the lives of their patients by resorting to amputation, while the whole system is in a complete tumult, occasioned by the influence of the injury. No correct rule can, therefore, be predicated upon mere lapse of time, but every thing should be determined by the condition of the patient.

III. *At what point may the amputation be most conveniently and advantageously performed?*—This question is much more easily settled than the preceding. There are two points at which the operation of amputation may be practised; through the articulations, and through the continuity of the bones themselves. The first was recommended

by GALEN and most of the ancients, but afterwards fell into disrepute, until it was revived in modern times by BRASDOR, and subsequently by LARREY. The advantages or disadvantages attending that method of operating will depend upon the magnitude and kind of articulation upon which the operation is performed. For the removal of the fingers and toes, and the carpus and tarsus, it should always be preferred, because those articulations are small, and do not present such an extent of surface as to involve any serious risk from inflammation, and the operation can be there performed with less violence to the structures than by sawing through the bones. Amputation may also be practised with safety at the shoulder and hip-joints, yet when the injury is not situated so high up as to compel us to adopt those operations, it will be better to operate through the continuity of the femur or humerus. BRASDOR, VERDUIN, DUPUYTREN, and some others, have repeatedly amputated with success through the elbow-joint, but as that operation involves more hazard than the common method of amputating through the humerus, and secures no more advantages to the patient, we think it ought not to be performed. With regard to the operation at the knee-joint, we think it should never be resorted to; for although the successful issue of a few cases have proved that it may sometimes be practised with safety, the fatal termination of many others clearly prove that it is unsafe. The extent of surface presented by that articulation, the numerous structures that enter into its formation, and, above all, their remarkable proneness to become affected with violent inflammation, are circumstances which alone should forbid the operation, to say nothing of the reticulated extremities of the bones, the difficulty of securing a sufficient flap to cover the stump, and the tardiness with which the soft parts form an adhesion with the surface of the cartilage. A flap cannot be formed at the ankle-joint, and as the wrist is so completely surrounded by tendons and synovial sheaths, as to expose the patient to great danger from inflammation, the operation should never be practised in those situations. In all other cases, therefore, than those specified above, it will be best to amputate through the continuity of the bones.

The next question discussed by the author is, what is the best method of operating? We shall not dwell upon this point, but shall merely observe, that each of the methods; that is, amputation by the circular incision, and by a single or double flap, has its advantages in particular cases. That which, in any case, can be performed with the greatest ease to the patient, and is calculated to form the best stump, should always be selected.

We shall not follow the author through his description of the method of performing the individual amputations, as this would be an act of supererogation. Suffice it to say, that he enters into a fair and candid examination of the various methods proposed by authors, and after pointing out their advantages and defects, describes that which he prefers. The following is his method of amputating at the shoulder joint, which, it will be seen, does not differ materially from one of the plans proposed by LARREY.

"I make a longitudinal incision, from the point of the acromian to the insertion of the deltoid, so as to expose the head of the bone, with a view of ascertaining whether it is healthy, and can be left. If it should not be diseased, I decapitate it, and suffer the head to remain. If diseased, so as to require removal, I extend two oblique incisions from that already made, and from the vicinity of the head of the bone, one of which is carried upwards and backwards, towards the shoulder, the other downwards, towards the axilla, so as to form two triangular flaps. These are then dissected back, and turned out of the way. A double-edged amputating knife is then carried between the acromian and the head of the humerus, and conducted in such a manner as to divide both the capsular ligament and the tendon of the biceps muscle, the arm being at the same time elevated, so as to allow the blade of the knife to glide through the joint, and to complete the operation by cutting a third triangular flap, which is situated posteriorly and inferiorly, and which may be approximated with the others by means of strips and bandages." p. 603.

The only advantage presented by this operation is, that the first incision will expose the head of the bone, which, when it is healthy, may thus be saved, if any utility can be presumed to arise from the adoption of that course. But when it is the object to remove the whole arm, regardless of the condition of the bone, the operation of LISFRANC will be much better, as it can be more expeditiously performed, requires less dissection, will inflict less suffering upon the patient, and will form a better stump.

The leg may be amputated either by the circular incision, or with a flap. When the operation is performed below the calf of the leg, it is sometimes difficult or impossible to turn up the integuments, in consequence of the portion of the leg, which is situated above the incision, being considerably larger than that from which the integuments are raised. To obviate this difficulty, the author practises two perpendicular incisions, one before, the other behind, so as to form two flaps of the length of one-third the diameter of the leg.

When the operation is performed in the second manner, the flap must be formed of the muscles and integuments of the calf of the leg, because, in front, there are not sufficient soft parts to cover the face of the stump. This may be done in the manner practised by VERDUIN,

by cutting from without inwards, or according to the method more generally resorted to in modern times, of transfixing the fleshy part of the leg, and forming a flap by cutting from within outwards and downwards. The following is the plan recommended by our author.

"The operator, placed on the inner side of the leg, grasps, with his left hand, the calf of the leg, in such a manner as to have the index finger fixed upon the fibula, when he wishes the point of the knife to come out, while the rest of the fingers and the palm of the hand are placed upon the posterior and internal part of the calf of the leg, so that he can draw the integuments and muscles backwards. A large double-edged amputating knife is then introduced immediately behind the inner margin of the tibia, at the point at which the bones are to be sawed, from whence it is to be thrust through the soft parts, while they are drawn backwards with the left hand, so that the point shall be brought out by grasping the posterior face of the fibula, at the point designated by the index finger. With a sawing motion of the hand, the knife is then to be carried downwards, in such a direction, that by cutting itself out, a flap will be formed of the length of two-thirds the diameter of the leg. With a convex-edged scalpel, the operator is next to extend a semilunar incision across the front and outer part of the leg, the extremities of which should intersect the first incision, half an inch below the point at which the bones are to be divided. The integuments should then be dissected to a level with the base of the flap, and the latter being turned up, and supported by an assistant, the soft parts situated between the bones are to be divided with a common catlin." p. 614.

This stage of the operation completed, the bones are to be sawed in the usual way. The author, however, observes very correctly, that where both bones are sawed at the same level, the fibula generally projects beyond the extremity of the tibia, so as sometimes either to protrude through the integuments, or keep up violent inflammation, by pressing against them. The saw should, therefore, be so conducted, as to divide that bone at least half an inch higher than the other, which is generally practicable, or a small portion of the fibula should be removed by means of a common metacarpal saw, while its end is held steady by an assistant, with a pair of common forceps.

We have generally preferred this method of amputating the leg, and although we have practised it frequently, we have never seen the sloughing of the flap, which has been urged as an objection against it. We think it decidedly preferable to the operation by the circular incision, as it forms a better stump, heals more readily, and subjects the patient to less pain. We are always cautious, however, to make the flap of sufficient length to cover the face of the stump, without straining the integuments, and in transfixing the member, we generally make the point of the knife describe the arch of a circle, the concavity of which is directed towards the bones, while the soft parts are drawn forcibly backwards with the left hand. By this means the

flap is slightly hollowed at the base, so that when it comes to be applied to the face of the stump, the muscles do not project beyond the skin, which they are sometimes apt to do, if this precaution be neglected. We also saw off a small portion of the anterior angle of the tibia, by carrying the saw in an oblique direction, either before or after the bone is sawed through. This practice, which is adopted by many of the French surgeons, is of considerable importance, for the sharp angle of the bone, if suffered to remain, is apt to project through the integuments.

We shall pass over many important articles, abounding with valuable information, and drawn up with much ability, to consider the subject of aneurism.

Aneurisma, *(Schlagadergeschwulst, Pulsadergeschwulst,)* is, according to the author, generally defined a pulsating tumour, filled with blood, and communicating with the cavity of the heart, or some artery. In the first case, it is called a cardiac, and in the latter arterial aneurism. Aneurisms are, moreover, divided, according as they are formed by a simple dilatation of the parietes of an artery, *(Dilatatio arteriæ, S. Arteriochalasis,)* or by a rupture of the tunics of the vessel, *(Ruptura arteriæ, S. Arteriodialysis, S. Arteriorhexis.)*

Galen and after him Paulus Aegineta recognised both these species of aneurism; but at a later period it was inferred by Aetius, Oribasius, Albucasis, and Actuarius, from the diffused character of the tumour, that the blood was merely extravasated beneath the integuments, this act taking place in consequence of either *anastomosis, diapedesis,* or *diaeresis.*

Aneurisms are furthermore subdivided according to their nature, form, situation, symptoms, complications, &c.

1. *True Aneurism.*—This consists in a morbid dilatation of all the coats of the vessel, and may be partial or complete, according as a small portion, or the entire circumference of the vessel is implicated. The latter is divided into spheroidal, or cylindrical, according to the configuration of the tumour; into circumscribed true aneurism, where the contour of the tumour is abruptly and distinctly defined, and diffused true aneurism, where the circumference is lost in the surrounding parts. The possibility of the development of aneurisms of this class has been fully established, notwithstanding the doubts of some pathologists on the subject:—1. By the researches of the most skillful anatomosts; 2. By the development of a general aneurismatic diathesis, as observed by Morgagni, Haller, Matani, Sœmmering, E. Home, Tartia, Michaelis, and others; 3. By the dilatation of the collateral vessels, which takes place after a ligature

has been applied to the main trunk of an artery; 4. By the frequent observation of an enormous dilatation of the aorta and pulmonary arteries of some amphibious animals; 5. By what takes place in that form of disease called aneurism from anastomosis.

Scarpa, as is well known, objects to this division of aneurisms into true and false, although he does not deny that the vessels are susceptible of having their entire circumference dilated in the manner here represented. These dilatations, however, he does not consider as participating of the nature of aneurism, which he conceives is always attended with a rupture or destruction of the internal and middle bodies of the vessel, and the subsequent dilatation of the cellular, (which he thinks does not appertain properly to the artery,) to form the walls of the sac. These ruptures he represents as generally occasioned by an ulcerative, earthy, fungous, or steatomatous degeneration of the coats of the vessel, and the simple dilatation he thinks occurs much less frequently than has been generally represented. In favour of this opinion, he urges the following arguments; 1. The slight elasticity of the proper arterial tunics; 2. The obstacles furnished by the degenerations to which they are subject, which disposes them to give way rather than to become dilated; 3. A careful examination of the structure and properties of the aneurismal sac, which does not present characters correspondent with those developed by simple dilatation. Notwithstanding all these objections, it has been ascertained by repeated examination, that tumours formed at first by a simple dilatation of the tunics of the artery, take on all the characters of aneurism, and when left to themselves, eventually lead to the same termination, as those which are developed in the manner represented by Scarpa. Such cases have been detailed by Malpighi, Morgagni, Sandifort, Hunter, Laennec, Hodgson, Naegele, Erhardt, and many other pathologists. They take place more frequently in the aorta, and other large deep-seated arteries, than upon the superficies of the body, and in some instances attain an enormous magnitude.

2. *Spurious or false aneurism.*—This form of the disease consists in a partial destruction of the continuity of a vessel, and the extravasation of the blood in the surrounding parts. It is called a circumscribed, or consecutive, false aneurism, (cysticum, s. saccatum, s. consecutivum, s. secundarium,) when it is occasioned by a destruction of the internal and middle coats of an artery, with a dilatation of the external, or cellular coat, to form a sac; but when all the coats of the vessel are simultaneously ruptured, and the blood is diffused

into the adjacent parts, it forms what is called a primitive, or diffused, false aneurism.

3. A mixed aneurism, (A. herniosium,) is that form of the disease, in which the outer tunics of an artery are destroyed, while its inner tunic is protruded through the aperture in form of a small sac, as takes place in the cornea, in the affection designated ceratocele. Its occurrence has been doubted by some pathologists. Dupuytren and Dubois, however, report cases.

4. Varicose aneurism.

5. Aneurism from anastomosis—Telangiectasis.

6. Spongy aneurism—Fungus hæmatodes. Band. 2, p. 5.

The treatment of aneurism is divided into medical and surgical, or pharmaceutical and operative. Under the first head are included diet and regimen; the free abstraction of blood, the long-continued employment of digitalis, the application of ice to the part, and, in short, all those means that are calculated to keep down the force of the circulation, so as to favour the development of an extensive coagulum in the sac, and the subsequent obliteration of the vessel, or the sac itself. To effect a cure by medical treatment great perseverance will be necessary, and the patient must be kept in a constant state of quietude and immobility, and have his system reduced by blood-letting and diet, until it is, to use the language of Hippocrates, *siccissimus* et *exsanguissimus*. Not much reliance can, however, be placed on the medical treatment of aneurism. To obliterate the diseased vessel, or divert the current of blood from the sac, surgical means must generally be resorted to. These are variable, but all have the same object in contemplation. The following scheme, drawn up by the author, will present a pretty fair synopsis of the usual surgical means resorted to for the cure of aneurism.

A. *By Compression.*

It differs principally from the treatment by ligature in this, that the compression acts in a lateral direction, whereas the force of the ligature is circular.

I. Compression of the tumour itself. (J. De Vigo.)

II. Compression of the trunk of the vessel leading to the tumour. (Blizard, Boyer, Richter, Hebenstreit, &c.)

III. Compression of the trunk of the vessel coming from the tumour. (Vernet.)

IV. Compression of the entire member by bandage. (Genga, Theden.)

B. *Operative Procedures.*

I. Ligature of the aneurismatic vessel.
  1. With a simultaneous operation upon the sac.
    a. By opening the sac, and evacuating its contents.
      a, a. Previously to placing a ligature above and below it. (Antyllus.)
      b, b. After applying a ligature above the sac. (Aetius, Paulus Aegineta, Guiellmeau.)
      c, c. After applying a ligature both above and below the sac. (Bertrandi, Boyer.)

The methods *b, b,* and *c, c,* are not practised at the present day, inasmuch as the operation is attended with many difficulties, and by the method *b, b,* there is generally a dangerous hæmorrhage, by the return of the blood through the lower orifice of the vessel.

    b. Extirpation of the sac after having applied a ligature above and below it.
      a, a. Extirpation of the entire sac. (Aetius, Purman, Platner, Pallas, Spangenberg.)
      b, b. Partial extirpation. (Pallas.)
  2. Without interfering with the aneurismal sac.
    a. By the application of a ligature between the heart and the tumour.
      a, a. In the vicinity of the tumour. (Anel.)
      b, b. Remote from the tumour. (Hunter.)
        1. By gradually tightening the ligature. (Dubois.)
        2. By dividing the vessel between two ligatures. (Tenon, Bell, Maunoir, Abernethy, and probably Celsus.
    b. By the application of a ligature between the swelling and the peripheric extremity of the vessel. (Brasdor, Desault, A. Cooper, Wardrop, Home, Bushe, Mott, &c.)

II. By approximating the sides of the vessel by compression applied to it alone without implicating the surrounding parts.
  1. By means of a particular instrument. (Assalini.)
  2. By means of a roll of lint, a piece of cork, a small block of wood, &c.

III. By incision of the aneurismal sac with the subsequent employment of pressure. (Guattani, Brossard, Sabatier, &c.)

IV. Cauterization of the tumour.
  1. By the actual cautery. (Lanfranchi.)
  2. By the potential cautery. (Fallopia.)

To this enumeration of the author we will add—

V. By transfixing the artery with a needle. (Velpeau.)

1. With a needle brought to a white heat. (Bushe.)

Many of these curative procedures are now no longer employed, the method of Hunter having taken the place of nearly all the others. It presents many advantages which entitle it to the preference. It is more easily put in execution; the ligature is always applied upon a sound portion of the vessel, and the patient is not submitted to the painful incisions, and the extensive inflammation and suppuration developed by most of the other methods of operating, and, in addition to all this, is less liable to secondary hæmorrhage. There are but few cases to which it is not applicable, and these only arising from the proximity of the aneurism to the heart, by which sufficient space is not left to apply a ligature to the cardiac extremity of the vessel. Under these circumstances, the plan originally suggested by Brasdor, of applying the ligature on the distal side of the tumour, may be resorted to, and has been repeatedly practised with success, by Wardrop, Home, Bushe, Dupuytren, Mott, and some others. The method, by transfixing the artery with a needle, is only applicable to aneurisms occupying the small vessels, and will be found very useful, when the needle is used hot, for the removal of telangiectasis, where the tumour is small. (Bushe.) Several important cures have been effected by the employment of *pressure of the arteries*, and a considerable number by copious depletion, extreme low diet, and the application of ice to the tumour.

We shall not follow the author through all his observations upon the treatment of aneurism, which, suffice it to say, are generally highly judicious and satisfactory. It will be sufficient, in illustration of the usefulness of his labours, to describe the method of taking up some of the most important arteries for the cure of the disease.

1. *Ligature of the axillary artery, below the clavicle, (Desault, Pelletan, Keate, Chamberlaine, &c.)*—This operation is called for, when the aneurism is so small, or is situated so low down, that sufficient space remains to admit of its being secured between the clavicle and the point at which the vessel engages itself beneath the pectoralis minor muscle, or where that vessel has been wounded so high up, that the hæmorrhage cannot be arrested by operating in the axilla.

The patient being placed in a sitting or horizontal position, is to have his arm extended to a right angle with the body, so as to put the pectoralis major muscle on the stretch. An assistant placed behind him, inclines the head to the opposite side, and remains ready to compress the artery, where it passes over the first rib, by means of

Erlich's blunt hook, in case of any alarming hæmorrhage taking place during the operation. According to Rust, the incision should be commenced immediately beneath the middle of the clavicle, and extended outwards towards the coracoid process, along the furrow situated between the deltoid and pectoralis major muscle. This incision should be from two and a quarter to two and a half inches long. It will divide the platysma myoides, half the fibres of the clavicular portion of the large pectoral muscle, and the tendinous portion of the pectoralis minor. The borders of the wound being held asunder by an assistant, the surgeon, with his finger, isolates the artery from its connexion with the brachial plexus and the subclavian vein, after which the ligature is to be passed beneath the vessel by means of an aneurismal needle, and drawn tight upon it and tied, while the knot is pressed down by the tip of the finger. Should the external thoracic be cut, as will sometimes be the case, it must be secured.

Langenbeck makes an incision of three or four inches in length, the central part of which is situated beneath the middle of the clavicle, while its outer extremity reaches the deltoid. By this method, the cephalic vein is apt to be wounded. Band. 2, p. 61.

A much better method of operating than either of these, is that proposed by Marjolin, and recommended by Lisfranc. The incision commences two and a half inches on the outer side of the articulation of the clavicle with the sternum, and is carried outwards upon the line which separates the clavicular from the sternal portion of the pectoralis major muscle. The arm is then brought to the side, to relax the muscle, and the surgeon isolates and secures the vessel with the ordinary precautions.

2. *Ligature of the artery above the clavicle, (Ramsden, White, Travers, B. Cooper, &c.)*—This operation is necessary when the aneurism is situated so high up, or is so large, that the vessel cannot be secured beneath the bone. It is easily executed in the dead subject; but on the living, where the clavicle, together with the scapula, is so much thrown upwards, by the magnitude of the aneurism, it is attended with many difficulties. Hodgson and Rust place the patient in the same position as for securing the artery below the clavicle. The shoulder being carried backwards, the surgeon commences an incision near the outer border of the sterno-mastoideus muscle, which is carried directly outwards behind and parallel with the clavicle, to the extent of two, or two and a quarter inches. This incision is carried through the skin and platysma myoides. The cellular tissue and glands are then to be separated with the finger, or Cooper's

scissors, and the artery is to be secured where it occupies the angle formed by the anterior scalenus muscle and the first rib.

Dupuytren and Gräefe, with a view of giving extent to the incision inwards, and facilitating the elevation of the vessel from its bed, divide the attachment of the scalenus muscle upon a grooved directory. This procedure can seldom be necessary, and should be avoided, except where it becomes indispensable, as in very fat persons, on account of the danger of dividing the phrenic nerve, or the subclavian vein. Liston makes first an incision of two and a half inches, parallel with the clavicle, and forms a second, which is perpendicular, of an inch and a half in length, upon the outer border of the sterno-mastoid muscle, and which falls upon the inner extremity of the first. Rust extends an incision of two inches in length in an oblique direction outwards and downwards, towards the middle of the clavicle, so as to fall upon the triangular space formed by the sterno-mastoid muscle, and the posterior belly of the omo-hyoideus. This method will sometimes afford greater facilities than those which have been detailed, where the clavicle is forced much upwards. Care should be taken not to wound the external jugular vein. p. 63.

3. *Ligature of the external iliac artery.*—We shall not detail all the methods of taking up this artery, which have been laid down by our author. That of Sir A. Cooper is the most simple, and the following, proposed by Langenbeck, does not differ materially from it in principle. An incision of four fingers' breadth in length, commencing two fingers' breadth from the anterior superior spinous process of the ileum, and a little higher up, is to be extended obliquely downwards and inwards towards the rectus muscle, and end one finger's breadth above Poupart's ligament. The tendon of the external oblique muscle is then to be divided in the direction of the first cut, having the internal oblique and transversalis entire. These muscles are to be detached from the peritoneum, and turned up by means of a blunt hook, while the artery is isolated and secured in the usual manner. p. 71.

4. *Ligature of the subclavian artery before it escapes between the scaleni muscles.*—Sometimes the aneurism is situated so high up upon the artery, that it cannot be tied between the clavicle and the scalenus muscle. Under these circumstances, it becomes necessary to search for the vessel before it reaches that muscle. This is, however, attended with many difficulties, and involves considerable hazard. In front of the artery, we have the pneumogastric and phrenic nerves, and the subclavian vein, which, when it is distended, covers the vessel at the point at which it has to be exposed. Behind it is the infe-

rior cervical ganglion of the sympathetic; below it, the pleura, and on the left side, the thoracic duct arches over the upper part of the artery, to reach the subclavian vein. On the right side, the posterior part of the vessel reposes in contact with the recurrent nerve.

A horizontal incision is to be made immediately above the sternal end of the clavicle, which is to be carried through the skin and platysma myoides muscle. A grooved directory should next be passed beneath the clavicular portion of the sterno-mastoid muscle, which must be divided. With the handle of the scalpel, the loose parts about the vessel are to be separated, so as to expose it if possible, on the inner side of the point at which the inferior thyroid and vertebral arteries are given off. The ligature should not be applied between the origin of these vessels and the scalenus, inasmuch as the space is so small, that in consequence of the proximity of the ligature to the collateral arteries, a coagulum could not form to obliterate the trunk of the vessel.

5. *Ligature of the innominata.*—Allan Burns suggested the practicability of securing this vessel in the living subject, and the operation was actually performed by Professor Mott, of New York, in 1818, and subsequently by Professor Graefe, of Berlin, in 1822. The first case survived twenty-six days, and the last sixty-seven days. More recently, the operation has been performed by Professor Hall, of Baltimore, but in consequence of the enlarged and diseased condition of the vessel, and its intimate adhesions with the surrounding parts, in attempting to isolate it, so as to pass the ligature, its coats gave way, and a profuse hæmorrhage took place, and as no time was to be lost, a bold attempt was made to pass the ligature by means of Wiesse's needle, but the bleeding still continuing, the wound was filled with sponges, which commanded the flow of blood, and the patient was put to bed. Though much exhausted, reäction took place, and he survived until the fifth day.

As Professor Mott's method of performing the operation is well known, we shall only describe that of Graefe. The patient being placed as in the operation on the carotid artery, he commenced an incision upon the tracheal margin of the sterno-mastoid muscle, about half an inch above the sternum. This was carried upwards to a sufficient extent, as in the operation for exposing the carotid. With the index finger of the left hand, passed between the sterno-mastoid and the sterno-hyoid muscles, the soft parts surrounding the vessel were separated a little above the sternum, and the ligature was passed under the vessel, by means of an instrument similar to that of Deschamps, and tied about an inch above the arch of the aorta.

Mr. King, of London, recommends that the incision should be com-

menced immediately above the jugulum sterni, about fifteen or eighteen lines from the inner border of the sterno-mastoid muscle. This is to be carried through the skin and platysma myoides, and upon the line of division between the two sterno-thyroid muscles, and finally through the profound cervical fascia. The artery may then be easily exposed between the sterno-thyroid muscle and the trachea. This operation, which was, we believe, first suggested by Mr. King, in 1828, had already been recommended by Professor G. M'Clellan, of Philadelphia, in 1820.* Bujalsky recommends, that after having made the first incision as practised by Graefe, the sterno-hyoid and sterno-thyroid muscles should be cut across, immediately above the sternum, with a view of facilitating the application of the ligature. Band. 2, p. 82.

We have selected these examples from many others, because the vessels are large at the points designated, and the operations instituted for securing them attended with considerable difficulty. We have entered but few comments, because the author has generally laid down the various plans generally recommended by the most distinguished surgeons, and if he has in some cases omitted to enumerate some operative procedures to which we would give the preference, we do not consider the omission very important, as those which he has recommended are generally judicious.

Having advanced thus far, it is time we should bring our remarks to a close. It will be seen that we have noticed but a few of the topics comprised in the five volumes before us. Indeed, we have not extended our analysis beyond the second, and even within that space, we have been obliged to pass over many articles that deserved to be noticed. We have said enough, however, to enable our readers to form some idea of the character of the work, with which we need scarcely say, we have been, ourselves, much gratified. There is, indeed, something peculiarly grateful in the examination of German works of merit devoted to medical science. Critically and profoundly conversant with the subjects of which they treat, their authors never fail to award due credit to others. There is perhaps no people on earth so extensively read as the Germans, and assuredly none so ready to acknowledge the labours of their brethren both at home and abroad. They are constantly referred to, whether contained in the obscurest journals, or the most elaborate treatises, and always with candour and liberality. In conclusion, we will merely observe, that we consider the present work highly creditable to the German medical literature, and its execution honourable to its distinguished authors.

E. G.

* See Medical Recorder, of 1820.

ART. XV.—*Lithotrity and Lithotomy compared; being an analytical Examination of the present methods of treating Stone in the Bladder, with suggestions for rendering lithotrity applicable to the disease in almost all its stages and varieties, and remarks on the general treatment of Gravel and Stone.* By THOMAS KING, M. D., M. R. C. S. &c. 8vo. London, 1832.

THE announcement of the invention of a process for destroying the stone in the bladder, and thus relieving the patient of a painful disease, without having recourse to the knife, like that of every other improvement in medicine or surgery was hailed with enthusiastic applause by a few, and received with distrust by the majority of surgeons; and while the former lost no time in testing the efficacy of the new operation, the latter not only abstained from imitating them until the favourable results proclaimed had been generally confirmed, but in several instances, unhesitatingly decided that the free introduction into the bladder, through the urethra, of a straight instrument of sufficient size, as well, indeed, as the other steps of the operation, could not possibly be effected with success or with safety to the patient;—a conclusion in which they were soon joined by a few of the more sanguine who had failed in their attempts. When, however, it was ascertained that M. CIVIALE, and other surgeons in France, succeeded daily with the new instruments—when the operation was witnessed by surgeons, who, from different parts of the continent of Europe, from Great Britain and America, flock annually to the French metropolis—when, moreover, the practicability of the operation was demonstrated *out* of France, not only on the dead, but also on the living subject, the individuals who had early advocated its employment were no longer held in the light of visionaries; the opposition it had encountered and which was founded on theoretical ground and preconceived notions was gradually withdrawn; and the failures which had been met with, were referred to their true causes—the inexperience of the operators, and, in some cases, the improper construction of the instruments employed.

The British surgeons, in particular, seem not only to have ceased to regard the subject of lithotrity with distrust or lukewarmness, but to have in great measure yielded their assent to the practicability and comparative innocuousness of the process, and even to the superior advantages of its application in a large majority of cases which before could only look for relief to a highly painful and dangerous operation. Even

in this country, where we have not, like the English, enjoyed the advantage of witnessing the application of the new instruments by professed and dexterous lithotritists, the few successful trials made by our own surgeons, some of whom have paid considerable attention to the subject, and practised in France under the eyes of MM. Civiale and Le Roy; aided by the mass of testimony in its favour which may now be collected from a number of eye witnesses and from various publications, have, in great measure, succeeded in silencing the opposition of many who had originally sneered at the operation and stigmatized it as a piece of French humbug.

These remarks have been elicited by a perusal of the volume before us, the author of which, after completing his surgical education at the Hôtel-Dieu of Paris, is at present engaged in the practice of his profession in the great metropolis of his native country. Although Dr. King may, for what we know, be accused, by the detractors of lithotrity, of having imbibed, during his long attendance on Parisian hospitals, a number of French pathological and therapeutical notions, a circumstance by the way, which, if founded, would not, in our eyes, detract in the least degree from his claims to the respect of his professional brethren, his work, taken in conjunction with other recent publications on the same subject, will, we have no doubt, prove highly serviceable, by tending to remove a portion of the prejudices still prevailing in relation to lithotrity; while, at the same time, it serves to indicate the degree of attention which that operation is, at present, attracting in England. At any rate it is a production which reflects much credit on the author, and deserves to be attentively perused by every surgeon who desires to familiarize himself with the comparative advantages of the various modes of affording relief to calculous patients. As we presume that few physicians in this country will have, at least for some time, an opportunity of consulting the volume in question, we have proposed to lay before our readers a brief summary of its contents.

The first part of the work contains an able and concise description of the urinary apparatus—of the bladder and peritoneum, particularly with exact measurements of its different apertures. On this portion of Dr. King's researches, it will not be necessary to dwell long. He remarks, that the size of the bladder depends in no small degree upon the quantity of urine it has been accustomed to contain—persons who habitually retain their urine long having large bladders, and the contrary being observed when this fluid is frequently voided; the summit of the bladder is sometimes extraordinarily large, while the lower and back region is always capacious.

"We now come to the relative position of the bladder. It is, however, of extreme importance, that the surgeon should first know that it is a fixed organ, not a floating one. There is one part of it as immoveably fixed as any soft parts in the body; yet this fact seems to have escaped anatomists, or to have appeared to them either too evident or of too little consequence to demand particular notice. The bladder is fastened at its neck, to the pelvis, nearly as strongly as tendons are to the bones into which they are inserted; and in this respect, it differs materially from every other organ in the abdomen. Its anterior part is fixed by those strong fibrous fasciculi described by authors as the anterior ligaments of the bladder; by the triangular ligament of the urethra, which is continued along the membranous portion of the urethra with the capsule of the prostate gland; and indeed, by the whole of the strong fascia of the pelvis. I do not mean to affirm that these parts are as strong as tendons, or ligaments; but they certainly yield as little without laceration or injury; and as this is one of the most important facts connected with the treatment of stone, I particularly solicit attention to it."

Dr. King remarks, that above the symphysis, the anterior region of the bladder corresponds, opposite the linea alba, to the fascia transversalis of Sir A. Cooper; but that whenever that organ rises fairly an inch and a half above the pubis, it is in contact with the peritoneum lining the wall of the abdomen, in addition to its own peritoneal covering.

"In other words; the shining surface of the peritoneal covering of the bladder is in contact with the same surface of the peritoneum lining the muscles of the abdomen; so that an instrument, to penetrate this part of the organ, must traverse the peritoneum twice."

Dr. King is induced to lay claim to the discovery of this fact, because all the authors he has read state, that where the bladder is distended so as to rise above the pubis, it passes to a considerable extent between the peritoneum and the abdominal muscles, or rather between it and the fascia transversalis. He was led to this discovery from having seen the peritoneum wounded in the high operation; an accident he could not explain, till he observed, on investigating the subject, that when the bladder is distended by insufflation, it rises in the proper cavity of the peritoneum.

"I do not pretend that a small part of the bladder, thus distended, may not be uncovered by the peritoneum above the pubis; but I positively assert, that this organ, (and in old persons especially,) expands in the abdomen, in some such manner as the uterus does in gestation, by a gradual yielding of its peritoneal, as well as of its other coats; and not by detaching the peritoneum, as it has been hitherto supposed from the abdominal parietes."

In an interesting chapter on the organization of the bladder and its excretory duct, Dr. King makes the following remarks in reference to the extent to which the peritoneum descends into the pelvis.

After stating that this membrane passes from the anterior wall of the abdomen over the summit of the bladder, and then lining its posterior surface, lateral regions and bas fond, is reflected upon the rectum and sides of the pelvis, he says—

"By this reflexion of the peritoneum from the bladder to the rectum, the inferior part of the pelvis is closed, and a sort of pouch or cul-de-sac is formed between these organs." "The middle part of this pouch advances within half an inch of the posterior margin of the prostate; whilst it recedes laterally, so as scarcely to cover the posterior extremities of the vesiculæ seminales. By this disposition, the most depending part of the peritoneal reflexion represents a quick curve, its convexity being turned forwards, towards the prostate. The peritoneum is not constantly reflected at the same distance from the prostate; in some subjects it does not come within an inch and a quarter of it; in others it advances as far as its posterior margin."

One of the objections originally urged against the operation of lithotrity, was, as some of our readers doubtless know already, founded upon the supposed impossibility or great difficulty of introducing a straight instrument along the urethra into the bladder. This objection, however, has been happily set so far at rest by the concurrent testimony of numerous surgeons, that at present few need be informed, that the passage of such instruments is not only practicable but easily effected. So true, indeed, is this, that there are not wanting surgeons who never, or very seldom, resort to curved instruments, either for sounding or other purposes. Dr. King, while perfectly aware that no difficulty is to be apprehended in the use of straight sounds, is not one of those who would completely discard the employment of curved ones. His sentiments on the subject will be ascertained from the following remarks, which we extract from his chapter on "the urethra considered in respect to its dimensions, form, and relations."

"It has long been a question in dispute whether the urethra is straight; and authors do not agree better about its direction; hence the difference of opinion respecting the form of catheters, and the variety of rules for introducing them. The urethra is, strictly speaking, a straight canal; that is, when detached from the penis and stretched in the direction of a line which would be a continuation of that of the inner surface of the basis or inferior region of the bladder. Now, although from its connexion with the penis it cannot in all individuals and at all times be made perfectly straight, the penis, which must be extended with it, not yielding sufficiently; yet, it may be drawn out so as to admit of the introduction of a straight instrument, which, when in the bladder in its natural position, will have precisely the direction of a line drawn from the inner surface or posterior edge of the trigonal space to the hole in the triangular ligament, and continued forwards. This line will be nearly parallel to the axis of the superior aperture of the pelvis. It is solely on account of the difference in

length and elasticity between the urethra and penis that the canal can be better stretched in most cases on a curved than on a straight catheter. But the curved instrument is not preferred merely for this reason; it has the advantage, when introduced into the bladder, of occupying its centre; whereas, the end of the straight one cannot be carried from the bottom of the organ, without considerable pressure on the upper part of its neck, and on the lower part of the edge of the foramen in the triangular ligament.

"A straight sound, when an effort is made to direct its end towards the centre of the bladder, represents a lever, the fulcrum of which is the lower margin of the opening in the triangular ligament, the resistance, the upper or rather anterior wall of the neck of the bladder, and the power the hand of the operator. With a curved instrument the whole of the bladder may be explored; its summit may be reached without difficulty: this is quite impossible with a straight staff."

After giving an accurate account of the dimensions of the pelvis in reference to the operation of lithotomy, Dr. King passes to the subject of that operation as performed in the perineum, and describes the modifications which he thinks might be advantageously made in the mode of performing it; not forgetting to notice the alterations he has made in the *lithotome caché* of Frere Cosme. This instrument he greatly prefers to the gorget, as well as to all instruments which are thrust through the prostate from the urethra; because it is impossible to measure precisely the extent of the incisions they make.

"It is stabbing in the dark. The position of the end of the staff cannot be always appreciated with certainty, and however successful some operators may have been who use the gorget, nothing but great good luck can preserve them from dangerous accidents."

Dr. King dwells particularly on the incision of the prostate, and on the extent to which it can be carried with safety to the patient. He remarks, that of the patients who submit to the lateral operation, one in seven or eight dies; and that in almost all those cases which have a fatal issue, death is produced either by the force used to extract the calculus, or by too extensive an incision in the prostate. If, he adds, the incision is small in comparison with the stone, death will follow from the violence done to the bladder and surrounding parts in the extraction; and if the incision is made sufficiently extensive to admit of the fair extraction of a stone one inch and a half in each of its two lesser diameters, death will follow from infiltration of urine.

"In criticising the lateral operation, the first thing to be attended to is, then, the volume of the stone; success or failure depends upon it. If the foreign body never exceeded three inches in its lesser circumference, so that the incision in the prostate might be limited to three-quarters of an inch, or a few lines more, the operation, when well performed, would seldom or never be fol-

lowed by fatal consequences. When it measures four inches and a half in its lesser circumference, or that (?) the sum of its two lesser diameters amounts to three inches, the patient may recover, but the chances are very much against him; and when it exceeds this volume, death is almost sure to be the result of the operation. The surgeon is in this dilemma—he must either use force or make a long incision; the former lacerates the prostate and cellular tissue, bruises the bladder, and stretches its membranes, and shocks the nervous system; the latter prepares the way for infiltration of urine: both are fatal nearly to the same degree."

To these conclusions Dr. King has arrived from considering that opposite to the prostate the space between the bones is only one inch and three-quarters; that the incisions being only made on one side, the whole of this space is far from being available; that more than an inch and a half will seldom be obtained by moderate pressure, and that the gland from its situation will not allow passage to a stone above the size stated without tearing—the effect of which is certain death.

"The experienced surgeon will admit," he says, "that in one-half the number of cases which terminate fatally, death is the result of force used to extract the stone; and whoever peruses attentively the history of such cases detailed with the *post mortem* examinations, will come to the same conclusions."

Dr. K. points out the dangers of long incisions—infiltration of urine and its effects, and next remarks that it would be difficult to say geometrically how long the incision may be made without danger, and that he will not presume to draw precisely the line, on one side of which is safety, and on the other death. He believes, however, that the danger of a wound in the prostate is in direct ratio to its extent, and that an incision necessary for the extraction of a stone measuring an inch and a half in its two lesser diameters, puts life in imminent peril.

"Of the two evils—the use of force, or a long incision—there can be no doubt which is the minor; since the latter subjects the patient to only one serious danger, whilst by the former he is exposed to many fatal consequences."

Dr. King has entered somewhat fully, in separate chapters, on the operation of lithotomy by the rectum and on the high operation; of neither of which he seems to entertain a favourable opinion. He next passes to the consideration of lithotrity—which it is the object of his work to compare to the other methods. After presenting a brief sketch of the history of that operation; after alluding to the cases of the Monk of Citeaux and of Colonel Martin, both of whom are affirmed to have devised, and cured themselves of stone in the bladder by means somewhat analogous to those now adopted for lithotrity; as

well as to Mr. Gruithuisen, who, as early as 1813, proposed a method for acting upon a stone in the bladder by trituration, our author adds, that in 1819 his countryman, Mr. Elderton, conceived the idea of lithotrity, and invented ingenious instruments for the operation. He, however, admits that here Mr. E. stopped, and gives credit to M. Le Roy and M. Civiale for being the first who constructed, and succeeded with, the instruments now in use.

It cannot be expected that we should undertake here a description of the process of lithotrity, or of the instruments employed in that operation, inasmuch as these subjects have long ere this been laid before the medical profession in this country, and have been several times noticed, more or less in detail, in this journal. The remainder of the present article will therefore be occupied with an account of the sentiments entertained by Dr. King in relation to the comparative advantages of lithotrity and lithotomy. The former of these operations, as it is now fully ascertained, is seldom applicable whenever the stone exceeds an inch and a half in two of its diameters. But as calculous patients are becoming every day better convinced of the manifold advantages it presents;—of the facility with which it is performed;—of the comparative absence of danger and pain attending it, when resorted to early, and before the stone has had time to attain considerable size, or the bladder has become irritable or inflamed, we have just reasons for hoping that such individuals will not only feel less reluctant to give it the preference over every other method, but finally appreciate the advantage of resorting to it at a suitable period; and that by this means the number of cases in which it is found altogether inapplicable, or in which it must be resorted to frequently, will be materially lessened. The experience of M. Civiale, on this point, is highly encouraging; for whilst each year the number of persons who apply to him for the purpose of availing themselves of the advantages of the operation, increases progressively, the proportion of cases in which the latter is found inapplicable, as well as the time required for a perfect cure, diminishes very considerably.

Our readers are probably aware that the instruments most in use at present consist of the three-branched forceps of M. Civiale, and the four-branched instruments of Baron Heurteloup. It has been, for some time, a subject of dispute among operators which of these instruments should be preferred—some deciding in favour of M. Civiale's; others giving the preference to that of the Baron. Dr. King has no hesitation in stating that there is only one case in which the four-branched instrument ought to be preferred;—where the calculus is composed of oxalate of lime, and is very hard. He remarks, that the

instrument with which it has been proposed to destroy the stone by excavation, is much more liable to break than the three-branched forceps; and that the one invented to act by concentric pulverization is open to the same objection, besides being inadequate to the purpose for which it was intended. Nevertheless he would assuredly recommend the four-branched instrument for the treatment of all large round stones, of whatever composition, if excavation, or still more, if concentric pulverization could be employed with efficacy and safety; but he contends they cannot.

"When an excavator shall be made so strong that there will be very little risk of its breaking, and so well as to reduce a stone to a mere shell, it will deserve to be adopted with the four-branched forceps, in preference to the drill and the three-branched instrument, whenever the calculus is large and round. But we are of opinion, that the most rational and safe plan of all for destroying calculi, would be that of concentric pulverization, were the saw sufficiently perfect to carry it into effect. Some of the strongest objections to lithotrity would then be obviated; there would be no rough fragments left to irritate the bladder; and as the instrument would leave the surface of the stone smooth, the operation, every step of which would bring relief to the patient, might be interrupted and deferred, at any time, with impunity."

Dr. K. likewise considers the four-branched forceps better adapted, than any other, to overcome the difficulty of seizing the stone, without pinching the bladder.

Dr. King advocates the cause of lithotrity on the following grounds:

"The great character by which lithotrity is distinguished from and elevated above lithotomy, is, that it accords far better with the recurrent nature of calculous disorders. When once the kidneys have taken upon themselves to secrete gravel, it is difficult to put a lasting stop to the habit. Whatever means are adopted, there always remains a certain predisposition to resume an action that has before existed, and the slightest causes may occasion a relapse. If then, the disease is liable to return, and to return frequently, it requires a remedy that can be repeated without the risk of life. Such is not lithotomy; but approaching to such appears to be lithotrity. When a patient is cut for stone, the operation puts life in danger; yet, it is no protection against a return of the disease; and as often as it is repeated, so often does the patient risk his life. Lithotrity, on the contrary, does not endanger life. It can be repeated with safety, and applied with effect, at the first moment of a relapse; it has also the great advantage, that the patient can contemplate it without the dread which lithotomy creates, not only in him, but even in the operator himself.

"It was a happy thought, that of reducing a stone in the bladder to a state which admits of its passing away with the urine. While in the form of gravel, urinary concretions are expelled by a natural process, in fact, by the exercise of the organs in which they are lodged; nature has this resource, until they become too voluminous to escape through the *urethra;* what then, can be more rational than to restore to her this power, in making them reassume the form of

gravel, by acting upon the morbid product, rather than by maiming a healthy organ? We do not pretend, that, in the present state of lithotrity, the morbid production can be got rid of without great pain, and some injury to the organ containing it; but this is owing to the deficiency of our instruments, and not to any defect in the plan. Few operations, indeed, are so well founded as lithotrity; and when once we possess instruments a little more perfect than those now in use, stone in the bladder will not be deemed a more serious disease than gravel. The only mode that could possibly be thought of, for accommodating nature at less expense, would be to cause the stone to return to a liquid state; but since there is scarcely a hope of our ever dissolving it in the bladder, our great aim should be to perfect the instruments for its pulverization, and to discover sure means for preventing its reproduction."

Dr. K. next takes in consideration, various objections that have been made to lithotrity, and adduces in answer to them, and in vindication of the operation, a number of observations and arguments, of which we shall here present an outline. Lithotrity has been opposed on the following grounds:—1. The difficulty of seizing the stone. 2. The liability to injure the bladder. 3. The liability of the instruments to break in the bladder. 4. The entanglement of the branches of the instrument in a hole made through the stone, and the impossibility of withdrawing the latter without lacerating the urethra. 5. The irritation of the bladder produced by the fragments of stones left in that organ, and by repetition of the operation; and the danger of a fragment remaining and becoming the necleus of another calculus.

1. In reference to the first objection, Dr. King remarks, that the difficulty, however great, is to be overcome by patience and by that dexterity which practice gives. Besides, it has been in great measure obviated; for by means of Baron Heurteloup's bed, the stone can almost always be made to roll to the back part of the floor of the bladder, where an experienced surgeon will seldom fail to grasp it.

2. Although the coats of the bladder may, by chance, be caught in the forceps by an expert operator, he will discover the accident early enough to avoid doing them any fatal or serious violence.

3. With regard to the third objection, Dr. K. is of opinion, that admitting the accident feared, may have happened once in twenty or thirty operations, it must be attributed to defects in the instruments; and that as these are rendered every day more perfect and less fragile, we may presume the time will come when such an occurrence shall be unheard of. "When it does take place, the patient must generally undergo lithotomy; but even then, he is not in a worse condition than he would have been before the invention of lithotrity."

4. The fourth objection, Dr. K. thinks, may be obviated by some modifications in the instruments, such as having the branches of the forceps separate throughout, as recommended by Messrs. Costello and Guthrie, so that, by withdrawing the external tube, they may be removed one at a time.

5. Experience has proved, that the fragments left after the lithrotritic process, do not give rise to inflammation in the large majority of cases. It has also proved, that the frequent application of the instruments, though it subjects the patient to a repetition of pain, has not been productive of the evil apprehended. The object is not so much to cure the disease in the quickest time, or with the least possible pain as to cure it without risk of life; and, if this can be done by additional pain, who would not think it his duty to submit to it? Although relapses are probably more frequent after lithotrity than lithotomy, yet the latter is known not to be devoid of them; and if it does occur after the former, it can only subject the patient to a little more grinding.

"The whole problem is, I know, to cure the disease in the bladder with the least possible pain and danger, in the quickest possible time. But, since we cannot obtain equally those results, and must choose between time, pain, and safety, on the one hand, and danger and promptness on the other, it is our duty to prefer security: time ought, in all cases, to be sacrificed to safety; safety to time, never. My wish is to apply this remark to all plans for curing stone; and I have no hesitation in saying, that had I to choose between an instrument, which would remove from a stone three grains daily, with perfect safety, and one that would destroy it in ten minutes with some danger, I should prefer the former. Time is not to be grudged, when it is to purchase with certainty and safety, freedom from one of the most agonizing diseases. If we can once arrive at the means of destroying a stone at intervals, and by degrees, without danger or inconvenience, it matters little how often they are employed, or how trivial the effect of each application of them. Every grain removed, is so much relief to the patient, who not only ceases to dread the operation, but actually hastens its repetition; he is in the state of mind of one who, engaged in an arduous undertaking, derives, from the satisfaction experienced at every successful step, fresh encouragement to proceed."

Dr. King remarks, that the opponents of lithotrity have not failed to enumerate, at full length, the cases to which it is inapplicable—those where the stone is very hard, or very voluminous, or encysted; and that diseases of the prostate, congenital contractedness and strictures of the urethra, have been much dwelt upon. But adds, that in considering these dispassionately, it will be found, that they do not constitute any thing like a foundation for hostility to the general adoption of the operation. After examining each of these objections,

somewhat in detail, he adds, that after this inquiry into the principal circumstances connected with the treatment of stone, by lithotomy and lithotrity; in which he has attempted to place side by side, their respective dangers and advantages by an appeal to facts, and thus to establish the degree of estimation in which each ought to be holden in practice, his conviction is, that wherever lithotrity can be employed, lithotomy should never be thought of.

"Whether we look at the structure of the parts concerned, at the nature of the disease, or at the results furnished by experience, we are led to the same conclusion. Every thing conspires to establish the superiority of lithotrity, and to place it at an almost immeasureable distance above lithotomy. A wound in the bladder, of itself, endangers life more or less, even when uncomplicated by the serious accidents we have had occasion to notice, and every one of which may separately cause death. On the other hand, the objections that can be made to lithotrity, however numerous, are but as dust in the balance, when weighed with those which belong to the other plan; and were we to attempt to express, in a few words, the verdict imperatively called for, by the testimony of reason and experience, that verdict would be—the abolition of lithotomy."

Dr. King concludes his work with some useful practical observations on the treatment of calculi of great magnitude and density, and terminates his work with a chapter on the treatment of stone in the female, and one containing general remarks on the medical treatment of calculous disorders. In closing this notice, we must express the high opinion we entertain of the merits of the volume before us, and the hope that every surgeon in this country will, before undertaking the treatment of stone in the bladder, become familiar with the facts and arguments adduced by Dr. King in favour of lithotrity. L.

ART. XVI. *An Essay on the Operation of Poisonous Agents upon the living Body.* By THOMAS ADDISON, M. D. Assistant Physician to Guy's Hospital; and JOHN MORGAN, F. L. S. Surgeon to Guy's Hospital. London, pp. 91, 8vo.

THE experiments detailed in the interesting volume before us, were undertaken without any intention of publication. The results of their investigations have, however, otherwise determined the authors; who discovered—

"In those results, that which is well worthy the attention of the medical philosopher; and which, they are willing to hope, is calculated to throw addi-

tional light upon a subject which must ever deeply concern the physiological the pathological, and therapeutical student."

With the view to render the object and bearing of their work clear and intelligible, the authors have premised some general remarks on the nature and influence of those agents that are usually included under the term of poisons. The definition they give of this term, does not differ materially from that adopted by toxicological writers; it is as follows:—Any substance which, taken in a small quantity into the alimentary canal, or introduced into a wound, or even applied to the unbroken and healthy surface of the body, is capable of producing effects deleterious or fatal to animal life. From this, it will be perceived, that every powerful medicine may be considered as a poisonous agent, which is only rendered beneficial as a remedy for disease by the diminished quantity in which it is administered, and consequently by the diminished influence it exerts upon the system.

"The distinction, therefore, between our most active and useful medicines and poisons, is an arbitrary one; every powerful medicine being, strictly speaking, a poison, when given in sufficient quantity; and most of our poisons being useful and powerful remedies for disease, when administered in regulated quantities. Every substance, then, whether solid, fluid, or aërial, which produces morbid action in the system, is, strictly speaking, a poison: the term, however, is commonly applied to those only of the most active kind."

It is very judiciously remarked, that the immediate impression stamped upon the living powers of the system by poisons, is a matter which must probably for ever remain involved in impenetrable darkness. Nor should this be a subject of astonishment, since such a knowledge would imply a knowledge of the proximate or first causes of vital phenomena. On the other hand, the local and visible consequences resulting from the action of poisons are so readily ascertained by experiment and observation, and are so generally known, that they have rarely afforded ground for discussion or controversy. To neither of these questions, therefore, do our authors desire to direct the attention of their readers. Their object is to investigate another and more interesting point connected with the operation of the agents in question, and which continues to be disputed and obscure. We allude to the medium through which poisonous substances convey a morbid impression to the system.

They remark, that before any sensible effect can be made upon the general system by the application of a poison, it is essentially necessary that an impression should be carried to the brain. The question then is, whether the actual contact of the poison with this organ is necessary for its operation, or whether sympathy between the

nerves of the poisoned part and the brain is sufficient to establish a communication, through which the latter may become affected. In order that the first of these effects—actual contact of the poison with the brain, should be obtained, it is necessary that the substance should be carried to that organ from the poisoned part through the circulation, either by the medium of the veins, or of the absorbent vessels; that it should be conveyed into the blood, either indirectly through the absorbents, or directly by entering the veins of the poisoned surface. In the latter case, the poison is said to influence the brain by the medium of venous absorption. This view of the subject is advocated by a large number of physiologists, and is supposed to be confirmed by the results of certain experiments, to which we shall advert presently, as well as by the detection of some poisonous substances in the blood, or the more intense vitiation of that fluid, in a great number of cases of diseases, through the agency of such substances on the system. But although very generally received, this explanation is not viewed as satisfactory by every physiologist, and there are not wanting those who, rejecting the idea of a necessary passage of the poisonous agent along with the blood, to the brain, support the theory of nervous communication between the part which has received the first impression of the poison, and the cerebral organ, and assert that the constitutional disturbance arising from the application of a local agent, is adequately accounted for by the connexion or sympathy naturally existing between the extremities of the poisoned nerves and the sensorium.

This, as our authors remark, is one of the most important questions to which a physiologist can direct his attention; for it is not confined to the phenomena produced by the action of poisons, but "involves a theory which has reference to every morbid action that takes place in a living animal, from the operation of local irritation upon the functions of the brain and nervous system." That this is the case, they argue from the circumstance, that—

"Whether constitutional disturbance shall be produced by the imperceptible operation of noxious miasmata, or whether it shall arise from a visible and local cause, as in the inoculation of small-pox, syphilis, or hydrophobia, still we find no distinct line of demarcation separating the essential characters of what is strictly called a poison, from those produced by more general and more ordinary causes of disease."

This parallel is founded on the circumstance, that no distinction can be established, which has reference to the periods elapsing between the application of a poison, or of an ordinary cause of disease, and the appearance of the effects produced by the brain, as we find

in both an endless variety in this respect; and that there exists a perfect similarity between the sensible consequences of poisons and those of other morbific agents. Our authors consider, that all fair analogy forbids the conclusion, that a poison, or an ordinary cause of disease shall, at one time, produce constitutional disturbance through the medium of one system of organs, and at another time through the medium of different systems; that under certain circumstances a poison, or any other cause of disease, shall affect the functions of the brain and nervous system at one time through the medium of the nerves, at another time by the circulation, and at another by the action of the absorbent vessels.

"It is contrary to all fair analogy, they say, to suppose, that any variety observed in the effect of a local agent, can essentially depend upon the medium by which it is carried into the system."

So far from feeling disposed to adhere to such a view, our authors very correctly believe that every organ in the living system is destined to perform its proper functions; that as far as our physiological researches have yet extended, we are justified in assuming, that no two organs in the human body are capable of performing the same function, and that two functions cannot be performed by the same organ.

In reference to the subject in question, they maintain, for instance, that the sympathy between the brain and stomach cannot be said to be conveyed along the eighth pair of nerves at one time, and by the circulating system at another: that when vomiting occurs as a consequence of concussion of the brain, it is occasioned by nervous sympathy; and that when morbid sensibility of the brain is produced by derangement in the digestive organs, that morbid sympathy is the result of absorption; and they deny that there are two roads between these two organs, by which sympathy is established; the one leading from the head to the stomach, and the other from the stomach to the head.

"Since then," they say, "the various phenomena resulting from the effects of poisons upon the system are too intimately connected with those produced by other causes of morbid excitement, to admit of any distinct line of separation; since we are led by analogy to believe, that the medium by which an impression is made upon the brain and nervous system, is the same in both cases, it must be manifest that the question, which has arisen amongst physiologists in every age, respecting the medium through which poisons influence the general system, is one that has reference also to the mode in which all morbid phenomena are produced in the living system; and therefore it involves a theory of the highest importance to the physiologist, to the physician, and to the surgeon; a theory, indeed, intimately and inseparably connected with every branch of science which has for its object the elucidation of those phenomena produced by local agents of every description upon the living body."

Messrs. Addison and Morgan next examine and criticise the opinions of former writers in relation to the medium through which poisons produce their effects upon the body; premising, 1, that although much valuable information respecting the morbid appearances which indicate the effects of different poisons may be found in the works of Fontana and others; as well as in the later productions of Orfila; yet these writers have left the question of the medium of communication as they found it, involved in doubt and obscurity; and, 2, that modern physiologists have endeavoured to establish the theory which would associate the operation of almost every poison with the process of venous absorption, while, however, they admit, that some of these poisonous agents destroy life so instantaneously, that they must be supposed to operate immediately upon the nerves. They commence with the experiments of Mr. Brodie, the results of which, that distinguished physiologist and surgeon has recorded in the Philosophical Transactions of London. The effects obtained in these experiments by the essential oil of bitter almonds applied upon the tongue, or injected into the rectum of cats, were, as some of our readers doubtless know already, referred by Mr. Brodie to the action of this substance upon the brain, through the medium of the nerves. Without pronouncing for the present, on the correctness of this theory, our authors protest against the train of reasoning by which it has, in this instance, been supported; for it is assumed by Mr. Brodie, that the susceptibility of any part of the human body to a morbid impression may be correctly estimated by a dissection of its nerves, and that in proportion to the greater size and number of these will be the rapidity with which such morbid impression is conveyed to the brain. They also dispute the assumption, that the extreme irritability of the nerves of the tongue under one proper cause of excitement, is to be considered as a proof of their increased excitability to action under the impression of a morbid agent; both of which suppositions would involve a theory respecting the multiplied functions of a single nerve, which is not only unsupported by analogical reasoning, but is in many instances directly contradicted by fact.

"By the functions of a nerve we of course mean the functions performed by its extreme branches, as unconnected with the effect produced upon the brain by a local stimulus applied to its main trunk; for it is well known, that the *trunk* of a nerve may, under the action of very different stimuli, convey a similar impression to the brain, the effect of which is recognised under the general term of *sensation*, whilst its *extreme terminations* only receive and convey to the sensorium those peculiar impressions, for the production of which the organ was first called into existence; and, as it is proved that the same stimulus applied to the extremities of a nerve, which is highly susceptible of its influence,

and which consequently produces an immediate and powerful effect upon the system, may be applied without producing any sensible effect upon the extreme branches of another nerve, which, from the operation of a different exciting cause, may evince an equal degree of excitability; as, in short, it has been shown that the functions of a nerve cannot be determined by its comparative sensibility, we are at a loss to conjecture what has induced Mr. Brodie to support an opinion, in which he is neither borne out by fair reasoning nor by sound analogy."

To establish the correctness of their opinion, our authors resorted to the following experiment. The spinal marrow of a half-grown rabbit was divided, and the leg inoculated with Prussic acid. The animal died in three minutes after the introduction of the poison,—this being the usual period of time in which that poison was found to operate upon these animals under common circumstances, when introduced into the same part. Now, they remark, if the impression produced upon the brain by the application of Prussic acid to a distant part be the consequence of its action on nerves of sensation and voluntary motion, as Mr. Brodie supposes to be the case, it would be difficult to explain the result of the above experiment. At the same time they affirm, that the theory of venous absorption cannot any better account for the instantaneous operation of the poison in the same example.

Passing next to the effects produced by the application of poisons to wounded surfaces, and to the manner in which, under such circumstances, these substances act upon the brain, our authors remark, that having found, in some experiments with ticunas, that the latter produced its effects in the usual time, even when the thoracic duct had been tied, or the axillary plexus divided, Mr. Brodie concluded, that it had acted upon the brain by entering the circulation through the divided vessels. Mr. Brodie endeavoured to support this view by the following experiment. A tape half an inch wide was tied round the thigh of a rabbit, excluding the sciatic nerve, and although the leg was wounded and poisoned with ticunas, yet no sensible effect was produced at the end of an hour from the operation. After this interval of time had elapsed, the ligature was removed, and in twenty minutes the animal was found motionless and insensible. Mr. Brodie further considers, that the poison does not produce its effects until it enters the substance of the brain, along with the blood in which it is dissolved; and from analogy infers, that other poisons may affect the system in a similar manner. In drawing this conclusion Mr. Brodie again assumes, that the nerves of sensation and volition are the organs by which, in case of nervous communication, a morbid impression is carried into the system; a theory which, had he

renewed his experiment, he would have been at once convinced was, according to his own hypothesis, founded in error; for if, instead of applying the poison of woorara to a limb, around which (excluding the principal nerve,) a tight ligature had been applied; if instead of using that poison he had applied Prussic acid, he would, according to our authors, have met with nearly the same result as was obtained by them on a repetition of the experiment. They conclude that Mr. Brodie's opinion respecting the mode of action of Prussic acid might be opposed to his views relative to the operation of the other substance; since the same argument by which the theory of venous absorption is supported in reference to the poison of woorara, holds equally good in this case as applied to the poison of Prussic acid.

Messrs. Addison and Morgan are of opinion that the kind of venous absorption for which Mr. Brodie has contended—an absorption into the venous circulation through the mouth of a divided vessel, is extremely problematical, if not physically impossible.

"When a vein is divided, it is well known, that unless some branch be interposed between the truncated extremity and the next valve in its course towards the heart, unless the current of blood be driven through the cut extremity of the tube by collateral branches, we find that the sides of the vessel as far as the next valvular interruption will collapse and remain inactive; supposing the poison, then, to enter this flaccid tube, it is completely prevented from mixing with the circulating blood which fills the vessel above the valve by the pressure made by that circulating blood upon the opposite side of the valve, and consequently, under such circumstances, unless it can be proved that a poison has the property of propelling itself, it requires no argument to prove that the substance, instead of passing into the circulation, will remain stationary in that part of the vessel through which no circulation is carried on. If, on the other hand, circulation be carried on by collateral branches through that part of the tube which lies between the nearest valve and the mouth of the divided vein, the effect will be still more unfavourable to Mr. Brodie's hypothesis; for the circulation in that part of the vessel will be revived, and consequently, instead of being carried towards the heart, the poison will be washed out of the wound; in either case, therefore, it seems highly improbable that the poison can pass through the circulation to the brain by the medium of a divided vein. We do not dispute that foreign substances may be taken into the system by means of absorption; but we very much question the possibility of that absorption taking place, as Mr. Brodie has supposed it does, through the truncated extremity of a divided vessel."

In reference to the opinion and experiments of Mr. Magendie on the subject in question, our authors remark that if his theory had related solely to the possibility of a poison entering the circulation, and producing, in that way, an impression upon the brain and nervous system, no possible objection could have been offered to the proof

which his experiments would have furnished; but that when they find, that the object of these experiments, relative to operation of poisons, has been to establish the fact, that the admixture of *all poisons* with the blood, which circulates through the veins of the poisoned part, is *absolutely* necessary to their operation, they feel called upon to urge, in the strongest possible manner, their objections both to the theory and to the slender foundation upon which it has been supported. They accordingly examine and comment upon almost every point of the experiments of the French physiologists—experiments which must be familiar to most of our readers. They contend, that the preliminary step of the operation—the administering of opium to diminish the sufferings of the animal was calculated to render all further investigations upon the body of the latter altogether nugatory; because when a sufficient quantity of opium is administered to produce the effect in question, this effect must interfere so materially with the action of any other specific agent, as to render it almost impossible, in many cases, to determine, by external evidence, whether, in the event of a fatal termination, the animal has been destroyed by the opium or by the other poison, or by the combined action of the two. In regard to the remaining steps of the operation they contend that the blood which circulated from the poisoned limb, through the femoral vein, must have brought the poison, with which it was mixed, into contact with the inner coats of the veins of the body, and that consequently, a highly irritable and widely extended surface of membrane was exposed to the action of that poison long before it could have reached the brain. They further object to M. M.'s theory on the ground that when a ligature is applied around the femoral vein of any animal, and the lower extremity of that animal on the same side is inoculated with Upas, the poison will exert its ordinary influence upon the system, which ought not to be the case, were the poison really *carried* to the brain; since the quantity thus carried would be very small; and again, that had the poison been carried to that organ, the circulation in the limb and the effects of the poison must have been retarded, which, however, was not the case. These objections they add will not apply to the theory of nervous communication, for the following reasons:

"That, as the nerves of the interior coats of veins are supposed by the supporters of that theory to receive the first impression from poison which circulates through the cavity of the vessel, and as these nerves are proved by daily observation to possess a high degree of morbid susceptibility; as, moreover, it has been proved by Mr. Magendie's experiments, according to his *own* showing, that the poison must necessarily pass through the largest veins in the body in its course through the circulation, it may reasonably be inferred, that any

difference in time, which ought, according to the other theory, to have occurred between inoculation and effect, is prevented by the unimpaired functions of those nerves which supply the inner coats of the veins above the amputated limb, as these nerves must, of course, convey, in the usual time, the impression which the circulating poison produces upon their extremities; and as the poison is manifestly brought through the severed limb to the trunk before it can possibly affect the system, it must still remain a point at issue, whether the brain itself, or the nerves of the veins, receive its first impression."

In reference to the conclusions which Dr. Barry has drawn from his experiments, our authors are of opinion, that the soft structures of the surface of the body, which are covered by an exhausted cupping-glass, must necessarily, from the pressure of the edges of that glass, be deprived, for a time, of all connexion, either nervous or vascular, with the surrounding parts; that the nerves must be partially or altogether paralyzed by compression of their trunks, and that, from the same cause, all circulation through the veins and arteries situated within the area of the glass must cease; that the rarefaction of the air within the glass being still further increased by means of a small pump attached to it, the fluids contained in the divided extremities of the vessels are forced into the vacuum, and with these fluids, of course, either a part or the whole of the poison which had been introduced; and that in such a condition of parts, it is manifest, that the compression on the one hand, and the removal of the poison from the wound on the other, will explain in a satisfactory manner the result of the experiment, as well to the advocate of nervous communication, as to the supporter of the theory of venous absorption.

From a survey of what precedes, as well as from the results of their own experiments; and after once more assuming that it is unphilosophical to admit a twofold mode of operation of poisons; and taking into consideration the effects of nervous irritation in producing disease under circumstances when the absorption of a morbific matter cannot be presumed to have occurred, our authors arrive at the conclusion—

"*That all poisonous agents produce their specific effects upon the brain and general system through the sentient extremities of nerves, and through the sentient extremities of nerves only; and that when introduced into the current of the circulation in any way, their effects result from the impression made upon the sensible structure of the blood-vessels, and not from their direct application to the brain itself.*"

The experiments detailed by our authors were instituted for the purpose of showing the extreme susceptibility of the inner coat of a vein when exposed to the action of a poison; 2d, that the almost instanta-

neous effect of a poison when circulating through a blood-vessel is rather to be attributed to its operation upon the sensible structure of the vessel itself than to its conveyance by such means to the brain; and 3d, of ascertaining whether in all cases the poison circulates in the blood and acts in that way on the nervous system of the animal.

The first of these points was established by placing, by means of small tubes inserted within the cut extremities of one of the jugular veins of a dog, small portions of woorara—the vessel being previously secured by ligatures above and below the place of division; and by allowing the poison, at a given moment, to mix with the blood, and to enter with it the torrent of the circulation. In these cases the effect of the poison was obtained in forty-five seconds. In another case, in which the same agent was placed *above* a permanent ligature and inclosed in a cylinder of quill, the effect was obtained in one hundred and eight seconds.

"The poison which was used in these two cases has never been known in dogs to produce a sensible effect upon the system, in cases of its insertion into superficial wounds of the body, in less than six minutes, and respiration usually has ceased in from a quarter of an hour to twenty-five minutes."

To establish the second point, the poison was introduced into the carotid artery of a fox-hound, and carried instantly into the brain. In the case of venous absorption and cerebral contact instant death of the animal ought to have been the result. But—

"It was found, that the time which elapsed between the removal of the temporary ligatures and the fatal effects of the poison upon the body, was nearly the same in this as in the former case of its introduction into the jugular vein, for the animal dropped in forty-five seconds, and ceased to respire in two minutes."

In another case the femoral artery was selected as the seat of a similar operation. As the poison, in this experiment, was carried downwards, it could not possibly find access to the brain until it had passed through the ramifications of the lower extremities, the capillaries and veins, to the heart, lungs, &c. all of which required considerable time. Yet notwithstanding these circumstances, the animal dropped in convulsions in the short space of forty seconds—even more rapidly than in the case in which the poison was sent directly to the brain through the medium of the carotid. The results of these experiments, which our authors consider as completely opposed to the theory which would attribute the action of a poison upon the system solely to its contact with the substance of the brain, are, they think, strengthened by other experiments they detail, in which the mere ap-

plication of a poisonous agent to the wounded substance of the cerebral organ was unattended by those immediate and fatal effects which might reasonably be expected by the advocates of the theory in question.

To settle the third point—whether poisons circulate with the blood through the brain, Messrs. Addison and Morgan resorted to the following experiment. Two dogs were held face to face—the carotids of each were cut, and the lower extremity of one artery was made to communicate, by means of a brass tube, with the upper extremity of the carotid of the other dog. By this arrangement the blood of one of these animals was forced to pass into the body of the other. Upon introducing the poison of nux vomica into the back of the animal from whose carotid the blood was passing into the vessel of the other, it was found, that although the usual violent effect was produced in the inoculated dog, and although that effect continued for the space of fourteen minutes, during which a free circulation was maintained between them in the manner already mentioned, yet not the slightest indications of the action of the poison upon the system of the other animal could be observed. In another experiment the jugular veins were substituted for the arteries. The animal contributing blood to the other was inoculated in the side of the face, and in the usual time exhibited the customary symptoms, which continued during seven minutes. But although the circulation was freely kept up through the artificially connected jugulars, the other dog never showed the slightest symptoms of being poisoned. Finally, by means of a double tube, the authors were enabled, in a subsequent experiment, to establish a complete double circulation between the carotids of a poisoned and of a sound dog. But in this experiment the results were similar to those obtained in the foregoing.

The authors terminate by stating that so far as they are competent to judge, they think they are borne out in the conclusion, that all poisons, and perhaps all agents influence the brain and general system through an impression made upon the sentient extremities of the nerves, and not by absorption and direct application to the brain; adding, that if the experiments detailed in this essay are not satisfactory to their readers, they at least indulge the hope, that what has been advanced may lead to the discovery of more satisfactory and more conclusive evidence than has yet been adduced on this truly important question; a question, indeed, of the deepest interest, not as a mere matter of curiosity, but as involving the elucidation of many of the most prominent, and at present, the most mysterious phenomena of a living body. L.

ART. XVII. *Report on the Epidemic Cholera, as it has appeared in the Territories subject to the Presidency of Fort St. George. Drawn up by Order of the Government, under the Superintendence of the Medical Board.* By WILLIAM SCOTT, Surgeon and Secretary to the Board. Madras, 1824. pp. 292. Folio. With Appendix, &c.

Du Choléra-Morbus de Pologne; Renseignements sur cette Maladie, recueillis par la Commission des Officiers de Santé Militaires envoyée a Varsovie, par M. LE MARECHAL DUC DE DALMATIE, Ministre de la Guerre. Paris, 1832. pp. 176. 8vo.

Cholera, as it has recently appeared in the towns of Newcastle and Gateshead; including Cases, illustrative of its Physiology and Pathology, with a view to the Establishment of Sound Principles of Practice. By T. M. GREENHOW, of (Newcastle upon Tyne.) London, 1832. pp. 162. 8vo.

Practical Observations on Cholera Asphyxia, communicated in a Report to the Greenoch Board of Health, as the result of a Mission to the Infected Districts. With an appendix. By JAMES B. KIRK, M. D. Greenoch, 1832.

Etude du Choléra-Morbus en Angleterre et en Ecosse pendant les mois de Janvier et Fevrier, 1832. Par le Professeur J. DELPECH. Paris, 1832. pp. 283. 8vo.

Traité Pratique, Theorique et Statistique du Choléra-Morbus de Paris, appuyé sur un Grand Nombre d'Observations recueillies a l'Hopital de la Pitié. Par J. BOUILLAUD, Médecin de cet Hôpital pendant l'Epédémie, Professeur de Clinique Médicale a la Faculté de Médecine de Paris, Membre de l'Academie Royale de Médecine, &c. Paris, 1832. pp. 426. 8vo.

Monographie du Choléra-Morbus Epidémique de Paris, Rédigée spécialement sur les Observations Cliniques de l'Auteur a l'Hôtel-Dieu de Paris. Par A. N. GENDRIN, D. M. Membres des Sociétés de Paris, Lyon, Louvain et Philadelphie; Medecin de l'Hôpital Cochin; Chargé pendant l'Epidémie d'un des Services de l'Hôtel-Dieu de Paris. Paris, 1832. pp. 336. 8vo.

THE pestilence whose progress we have been so long watching at a distance, has not only reached, but has actually already traversed no inconsiderable portion of our continent, and its past history affords ample grounds for the apprehension, that it will not only pervade our whole hemisphere, but that even where it has already prevailed it will again recur—that it may take root in our soil, and for an indefinite period annually sprout forth with greater or less vigour.

The subject has consequently lost none of its interest, even to those who have already had to contend against the ravages of this scourge, whilst to those who are anticipating a visitation, it has become one of absorbing importance; we therefore feel it to be our duty to redeem, without further delay, our promise of entering upon the consideration of its symptoms, pathology and treatment. We have never, however, undertaken a task with greater reluctance, and if personal considerations were permitted to influence us, we would postpone its performance until time should be allowed to digest more satisfactorily the large mass of materials before us. But during this delay, the ravages of the disease over our whole country might be accomplished, and as our gleanings, imperfect as they are, may perhaps prove useful to the profession, we do not feel ourselves justified in withholding them.

Malignant cholera is far from presenting any uniformity in the mode of its attack; on the contrary great diversity is observed in its symptoms. In most instances, its onset is violent and sudden, but usually preceded by certain premonitory symptoms, as furred tongue, diarrhœa, and general failure of the digestive powers, with pain or weight at the scrobiculus cordis, or some part of the abdomen, and frequently head-ache, tinnitus aurium, &c. Sometimes there is increased vascular action, giving to the patient a feeling of unusual good health, and a greater excitement of animal spirits than is usual to him; much more frequently, the patient feels languid, weary and oppressed, with a general feeling of undefined indisposition.* This state often continues for several hours or even days without being followed by the more characteristic features of the disease, or may even cease, the disorder proceeding no further. Usually after these slight symptoms, and often some hours after a meal, or more frequently still at night, the patient is attacked with a sensation of violent oppression, of cardialgia, frequent nausea, almost constant and colliquative diarrhœa, with fluid discharges resembling rice water; vomiting soon comes on, and after the common contents of the stomach, a clear watery fluid, interspersed with flocculi is discharged, and a feeling of exhaustion, sinking and emptiness is experienced. The powers of locomotion are speedily arrested; spasms affecting occasionally and by turns the whole of the muscles of voluntary motion, but particularly those of the legs, feet and hands come on; the pulse becomes small, weak, and accelerated; respiration laboured; tongue broad, pale and moist, &c.

* Greenhow, p. 5.

This condition of things soon ushers in another still worse. There is now a distressing sense of pain and burning heat in the epigastrium, with urgent thirst and desire for cold drinks; the blood forsakes the surface; the skin becomes cold, covered with a clammy, colliquative moisture, corrugated on the fingers and toes, and inelastic; the lips are livid or blue, and the limbs and parts of the body assume the same colour; the pulse gradually decreases until it is no longer to be felt at the extremities, and finally even the action of the heart is scarcely perceptible on the application of the ear to the chest; the respiration is oppressed and slow; the breath cold; the voice feeble and altered; the eyes are sunken and surrounded by a livid circle, the features contracted and the face exhibits a peculiar cadaverous aspect; the tongue becomes cold, and for the most part white with pink at the edges; bile and urine are no longer secreted; at this period the vomiting, purging and spasms generally abate, and sometimes entirely cease. The sensorial powers do not participate in this wreck of the organic functions. The patient is often drowsy, but answers distinctly and accurately all questions put to him. In some cases his sense of feeling appears acute, causing him to complain greatly of the heat applied to restore warmth to his surface; in other instances, however, the skin is not sensible even to the action of chemical agents. It often happens that the patient dies at this stage, without convulsions, or any apparent pain, and more frequently without the knowledge of those who surround him, so insensible is the transition from life to death, and so strongly does the living patient resemble the corpse.*

When a fatal result is averted, either by the efforts of art or the recuperative powers of nature, the skin becomes gradually dry and warm; the pulse is developed, the tongue slightly red, the respiration freer, &c. Should the reäction be moderate and sustained, the patient may now recover; but if on the contrary it is violent, the skin becomes hot, the eyes injected, tongue dry and encrusted, coma ensues, and death closes the scene.

If this brief outline of the disease be accurately drawn, it would appear that we may trace in its progress five stages; viz.—1st, the initiatory stage; 2d, the onset of the disease; 3d, the stage of collapse; 4th, the period of reäction, and 5th, the adynamic or typhoid stage.

It must not be, however, supposed that these stages are to be recognised in every individual case. On the contrary, the disease sometimes runs through the first and second stages, with such rapidity,

* Archives Générales, May, 1832.

that they cannot be distinguished, and the patient appears at once to fall into collapse. These are the most fatal cases. There is sometimes in such cases but little apparent commotion in the system; no vomiting; hardly any purging, perhaps only one or two loose stools; no perceptible spasm; no pain of any kind; a mortal coldness with arrest of the circulation comes on, from the beginning, and the patient dies without a struggle. Several instances were heard of at Hobby, and other places in India, of natives being attacked with the disease whilst walking in the open air; and having fallen down, retched a little, and complained of vertigo, blindness, and deafness, they expired in a few minutes.* Similar cases were reported to the Medical Board of Bombay by Mr. Gordon.† A woman, walking on the Boulevard, in Paris, in the neighbourhood of Neckar Hospital, was seized with cramps, fell, and before she could be placed on a litter was dead.‡

Considerable differences have also been observed in the symptoms in different persons and at different epidemic visitations. Thus at one period it has been distinguished by the absence of vomiting, and the prevalence of purging; on another, by the excess of vomiting, and though more rarely, by the absence of purging. Spasm has been generally present in one instance of invasion, and in another not distinguishable.§

In Paris it was observed, that in children, females, and very irritable persons, nervous symptoms predominated; the cramps were attended with true convulsions; symptoms were even observed which simulated tetanus, during the paroxysms of which the patient expired. In plethoric subjects, with large and robust bodies, the inflammatory form of the disease manifested itself more frequently, the tongue was red and irritated, the epigastrium was the seat of acute pain, there was violent fever, very copious vomiting, insatiable thirst, and other symptoms demanding evidently an antiphlogistic treatment. In other instances the asphyxial type predominated—the blueness of the skin occurred from nearly the commencement of the attack, and the death of the patient took place often very promptly.‖

Having thus attempted to point out the ordinary succession of the phenomena of cholera, and the more usual varieties in its feature, we proceed to the more particular consideration of the symptoms.

The *premonitory symptoms*, as they have been termed, upon which

* Orton, p. 8. † See Report, p. 82.

‡ The Cholera Spasmodica as observed in Paris in 1831, &c. By Ashbel Smith, M. D. of North Carolina.

§ Madras Report. ‖ Archives Générales, April, 1823.

so much stress has been recently laid, were not overlooked by the practitioners of India, though many of them appear to have viewed these symptoms as having no other connexion with the epidemic than as predisposing to its attacks. Thus Mr. Scott remarks—

"*This most formidable disease does not appear to be attended with any premonitory symptoms which can be regarded as being at all peculiar to it; on the contrary, we may safely assert, that it is of sudden invasion:* for though a slight nausea, a laxity of the bowels, and a general feeling of indisposition are often found to precede cholera, yet these symptoms are evidently common to many acute diseases; and they are especially frequent in this climate, without being followed by any graver ailment. When such symptoms are found to precede cholera, they might with more truth be regarded as indicating merely a certain deranged state of the alimentary organs, a condition of the body which certainly *predisposes* a person to an attack of cholera."*

All the practitioners in India do not, however, agree with Mr. Scott in representing the disease as unattended with premonitory symptoms. Thus, Mr. Orton represents the attack as usually sudden, "but in *a great majority of instances*, not without some premonitory symptoms."

"It is frequently," he adds, "preceded by a simple diarrhœa, continuing several days, and still more commonly by other slight affections, which are more characteristic of the disease. Most commonly, it is in the middle of the night, or early in the morning, that these ominous disturbances are first felt. An extraordinary depression of spirits and general uneasiness comes on, attended by tremor and sense of debility, giddiness, and head-ache, and occasionally ringing in the ears, are also felt, particularly on rising from the recumbent posture, or making any sudden movement. Pains, resembling those which attend the accession of fever, are sometimes felt in the limbs. The bowels are griped occasionally, and natural loose stools occur; nausea comes on. The circulation and the temperature of the body are variously disturbed, but most commonly the pulse is accelerated and weakened, and the skin is moist, and colder than usual to the hand of another. These symptoms, or some of them, not unfrequently continue many hours, or even a day or two, without proceeding much further, or exciting much attention."

Mr. Annesley says, that one of the first symptoms the patient is sensible of, is a burning sensation between the scrobiculus cordis and umbilicus, and that he has never seen a case of the epidemic wherein it did not exist.†

Drs. Russel and Barry, in their report from St. Petersburgh, dated July 27th, 1831, state the disease to have been often preceded for one, two, or more days by ordinary diarrhœa. Mr. Searle, who

* Madras Report.

† Sketches of the most prevalent diseases of India, &c. 2d edition, p. 34.

saw the disease both in India and Poland, says that his experience warrants him in saying, that the cholera is usually preceded by diarrhœa of some hours' or even days' duration, and that this symptom is often preceded by others of even longer continuance; such as a sense of malaise or lassitude, with oppression at the præcordia, and not unfrequently with constipation of the bowels.* M. S. Pinel, who also observed the disease in Poland, asserts, that its attack was very rarely instantaneous. Very frequently, not to say always, there had been, in persons who appeared to be suddenly attacked, precursory symptoms, but which had not been attended to; the most common were *pains in the epigastrium*, and along the spinal column, cramps in the calves of the legs, and sensations of shootings in the fingers and toes.†

Dr. Rang, of Orenburg, represents the disease in that city to have announced itself several days in advance, by nervous symptoms similar to those produced by the gas from charcoal, by vertigo, giddiness, restlessness, insomnia, paleness of the face, coldness of the chest, palpitations, *pains in the abdomen*, *disgust of food*, loss of appetite, constipation, &c.‡

Dr. Kirk asserts, that diarrhœa always precedes cholera, and he has adduced the testimonials of nearly forty practitioners of England and Scotland, in support of that declaration.

In Paris, it was remarked that most of the subjects attacked with cholera, had been affected for several days and sometimes even several weeks, with derangement of the digestive organs, so slight generally, however, as not to have attracted much attention. This derangement consisted in a diarrhœa, the origin and cause of which was for the most part unknown, which continued two or three days, ceased and again returned, without any other general phenomenon except a slight feeling of debility.§

M. Gendrin's testimony is to the same purport, and we must be permitted to quote his remarks on this point.

"Epidemic cholera is always," he observes, "preceded by precursory symptoms. I have met with patients who declared that they had not experienced any derangement in the health previously to the sudden invasion of the characteristic symptoms; but these patients were, for the most part, men living in poverty, or constantly half drunk; they belonged to that class, which is so large in hospitals, who are accustomed to neglect the derangements of health which

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* London Med. Gaz. Jan. 1832, p. 506. † Gaz. Med. de Paris, Tom. III.

‡ Recherches Historiques et Critiques sur le Choléra Morbus. Par F. E. Foderé, p. 165.

§ Gazette Médicale de Paris, Tom. III.

are not attended with great pain, or to that class whose faculties are so little developed, that they cannot give an account of the symptoms they experience, although they may be evident to the physician at the moment he questions them. I have never seen any person living in a tolerably regular manner, whose intellectual faculties were at all developed, or belonging to that class of persons who give a correct account of their feelings, who has not declared that he had experienced precursory symptoms. As a great number of patients have been under my observation, I do not hesitate to lay it down as a fact, which admits of but rare exceptions, that the cholera morbus is constantly announced by premonitory symptoms, *(prodromes.)* They present two forms; the diarrhœal and vertiginous." p. 15.

In Canada and in the United States, most of the authorities concur in stating, that disorder of the digestive organs, and for the most part diarrhœa, preceded the explosion of the more violent choleric symptoms.

This so general precedence of the cholera in all countries, by derangement of the digestive functions, and more especially by diarrhœa, appears to us to indicate a more intimate relation between them than is admitted by the author of the Madras Report, and to show that this last is the effect of the epidemic influence, determinative of the first; and that it is in all instances either the initiatory stage of the pestilence, or a mild form of the same, easily aggravated into its most malignant shape by imprudence in diet, exposure, neglect, &c. In a disease so perfectly manageable in its early stages as cholera, and which has hitherto proved so utterly refractory to medical treatment in its subsequent progress, it is impossible to attach too much importance, or to insist too strongly upon this point. During the prevalence of the epidemic, every symptom of disorder of the digestive apparatus should be viewed with suspicion, and it is the duty of the profession to impress upon their patients the importance, in all such cases, of applying early for advice.

Vomiting.—This is a prominent symptom in cholera, but there are numerous instances in which it is entirely absent. According to Mr. Scott, in certain epidemic visitations in India, there was scarcely an individual case in which it was manifested;* and M. Pinel asserts that in Poland it was absent in three-fifths of the cases.† In Paris, London, and in this country, this symptom has been observed to be pretty constantly present. In some cases the stomach seems to be freely and perfectly emptied; at others there is an ineffectual straining and painful effort to vomit, and a spouting up of any fluid which is swallowed, as if by an effort of the lower part of the œsophagus, rather than of the stomach itself. Vomiting

* Madras Report. † Gaz. Med. de Paris, III. 102.

is sometimes altogether absent, or if it has been present, soon ceases, from an atonic state of the stomach, under which this organ receives and retains whatever may be poured into it, as if it were really a dead substance. This is a most alarming state, but it must not be confounded with the same condition arising from the absence of irritation of the stomach.

The matters expelled by the mouth are ordinarily at first the usual contents of the stomach, afterwards it consists of a whitish, sero-mucous liquid, more or less transparent, sometimes inodorous, and mixed with albuminous flocculi. In some instances this fluid is of a yellowish, at others of a greenish tinge, probably owing to the admixture of bile, though Mr. Scott thinks it is too readily admitted that these colours are owing to this course.

"Supposing, however," he remarks, "that either the yellow or green hue of the matter vomited in cholera, indicates the presence of bile, it is undoubtedly of rare occurrence, especially during the acute stage of the disease. It would appear, nevertheless, that apparently bilious matters have been vomited, particularly at the beginning, and towards the favourable termination of the disease, and even in cases, which have ended fatally."

The quantity of fluid vomited is various, sometimes being prodigious, issuing from the mouth of the patient in an almost constant stream, at others the discharge is small.

Dr. Clanny states, that a careful analysis of this discharge has given him the following results:—Water, 991; fibrine, 5; albumen, 1; carbonate of soda, 2; animal extractive, 1.*

Purging is a more constant symptom of cholera than vomiting, and usually precedes it. This symptom is rarely altogether absent, though it unquestionably is so occasionally, and when this is the case it appears to denote a peculiar malignancy in the attack. In cases, where little or no purging has taken place during life, the intestines, have yet been found, after death, to be filled with rice water, like matter, as if they had wanted energy to throw it off, or, as if a stricture had been formed on the lower portions of the gut. The dejections are sometimes made without effort or uneasiness; at others, they are thrown out with great force, which has been compared to the squirt of a syringe. There is seldom much griping or tenesmus, although the calls are very sudden, and are irresistible. In advanced stages of the disease, purging generally ceases; but in many cases a flow of watery fluid from the rectum takes place on any change of position.†

The matters evacuated, after the first emptying of the bowels, are most usually a clear, watery fluid, with white flocculi, resembling

* Hyperanthraxis, or the Cholera of Sunderland. By Reid Clanny, M.D. p. 112.
† Madras Report.

rice water; Mr. Scott describes its most common appearance to be that of pure serum, so thin and colourless, as not to leave a stain on the patient's linen. Sometimes the matters evacuated, are greenish or yellowish, from a tinge of bile, or turbid, of a frothy appearance like yeast, or rose-coloured from a small quantity of blood; occasionally of a deep chocolate colour, and not unfrequently bloody. Mr. Ogilvy reports several cases in which "the evacuations were almost wholly composed of pure blood."* The reäppearance of fœcal matter, especially if tinged with bile, Mr. Scott says, seldom, perhaps never, takes place till the disease has been subdued. In some cases, the dejections are inodorous, in others they have a very peculiar smell.

The quantity of the discharge is sometimes exceedingly great, and were it uniform, as Mr. Scott remarks—

"It might afford us an easy solution of the debility, thirst, thickness of the blood, and other symptoms: but it is unquestionable, that the most fatal and rapid cases are by no means those, which are distinguished by excessive discharges. We have innumerable instances, on the contrary, of death ensuing after one or two watery stools, without the development of any other symptom affecting the natural functions. Even collapse has come on, before any evacuation by stool had taken place."†

The following results were obtained by Dr. Clanny on analysis of the dejected fluid:—Water, 989; fibrine, 6; carbonate of soda, 3; animal extractive, 2.

Spasm has been considered by many as an essential feature in this disease, so far, however, as relates to the muscles of voluntary motion, says Mr. Scott, no symptom is more frequently wanting.

"Spasms of the muscles," he adds, "chiefly accompany those cases, in which there is a sensible and violent commotion in the system. Hence they are more frequently found in European than in native patients; and in the robust of either, than in the weakly. In the low, and most dangerous, form of cholera, whether in European or native cases, spasm is generally wanting, or is present in a very slight degree. The muscles most commonly affected are those of the toes and feet, and calves of the leg; next to them, the corresponding muscles of the superior extremities; then those of the thighs and arms; and, lastly, those of the trunk, producing various distressing sensations to the patient. Amongst these, hiccup is not unfrequent, but it has been observed that this symptom, in cholera, is not at all indicative of danger. The muscles of the eye-balls have not been observed to be affected with spasm, unless the sinking of these organs in their orbits may be considered to be an effect of it. The reports make frequent mention of a remarkable, permanent contraction of the muscles of the abdomen, by which the belly is drawn towards the spine. The spasms attending cholera are of a mixed nature, not strictly clonic; the relaxations being less prompt and frequent than in epilepsy or convulsion; and seldom durable as in tetanus. The

* Orton, p. 34. † Madras Report.

contractions of the muscles are invariably attended with pain, and some Medical Officers have observed, that a degree of spasmodic stiffness has continued for several days afterwards. It has also been remarked, that spasmodic twitchings of the muscles have taken place after death, and have continued for a considerable time. In one case, where a man had been paralytic in his limbs, with a total numbness of them, they were severely affected with spasms, and became exquisitely sensible. It is pretty evident, that there either has been an inaccuracy in the description of spasm occurring in cases of cholera, or a sensation differing from that of spasm has been confounded with it; for, by the descriptions, we would be led to suppose that the spasms begin, and are felt, *in* the toes and fingers, which cannot be the case. As the extreme muscles however are generally first seized with spasm, it is probable that the small fleshy bundles in the palms of the hands, and soles of the feet *are* affected; but there seems reason further to conclude, that pain *is* really felt *in* the fingers and toes, and that it is referable to a sort of nervous twinge or tic douloureux in these parts, distinct from spasm, which is not uncommon in other disordered states of the digestive organs."*

Trismus was observed in a considerable number of instances in India,† and it occurred in one case in the *Hôtel-Dieu* of Paris. The jaw has frequently continued locked several hours.

At Gateshead complete emprosthotonos was observed, the body being contracted into a kind of ball, which it is impossible to roll out after death;‡ and M. Foy describes opisthotonos to have been a very usual attendant on the disease in Poland.§

Several instances are recorded in which spasm of the muscles of deglutition were brought on by attempts to swallow.‖ Cramp of the stomach is by no means a common symptom.¶ Spasms usually come on early in the disease, and often cease when the stage of collapse is fully formed.

The returns of the paroxysms of spasm are frequently brought on by the slightest exertion; and in particular they appear to be intimately connected, in regard to cause, with those of vomiting, these affections frequently recurring together.**

Hemiplegia has been noticed as a consequence of cholera in one or two instances.††

Collapse.—Sinking of the circulation is the most invariable symptom in cholera; nevertheless, where instant remedial measures have

* Madras Report. † Orton, p. 31, 39.

‡ Observations on the Pestilential Cholera, &c. By William Ainsworth, Esq. p. 58.

§ Du Cholera-morbus de Pologne ou recherches Anatomico-pathologiques, Therapeutiques et Hygieniques sur cette Epidémie. Par F. Foy, M. D. P. L'un de Médecins Envoyés en Pologne. p. 11.

‖ Orton, p. 32. ¶ Ibid. ** Ibid. 2d edit. p. 3. †† Ibid. p. 33.

been successfully practised, this symptom may not have developed itself. The period at which a marked diminution of vascular action takes place, is somewhat various.

"The pulse," says Mr. Scott, "sometimes keeps up tolerably for several hours, though very rarely. It more generally becomes small and accelerated at an early stage; and, on the accession of spasm or vomiting, suddenly ceases to be distinguishable in the extremities. The length of time, during which a patient will sometimes live in a pulseless state, is extraordinary. Dr. Kellett relates a case, where the pulse was gone within three hours from the attack; yet the man lived in that state, from the 3d of October, at 4 P. M., to the 6th, at 2 P. M. On the cessation of the spasms or vomiting, and sometimes, apparently, from the exhibition of remedies, the pulse will return to the extremities for a short time, and again it will cease. The superficial veins and arteries are not always collapsed, even when the pulse has ceased. If these vessels be opened in this condition, the contained blood flows out; their walls then collapse, and no more blood can be extracted. There is no authenticated fatal instance of cholera on record, where the circulation has not been arrested, in the extremities at least, long before death took place."*

Thirst, and a sense of heat or burning in the epigastric region, often extending over the whole abdomen, form very prominent and constant symptoms; yet not only in individuals, but even in epidemic visitations, Mr. Scott says, that they have been altogether absent. When they are present in the highest degree, and, as Mr. Jameson observes,† "all is burning within;" the mouth and tongue are generally moist, cold, and blanched. At times, however, according to Mr. Scott, the tongue is parched, dry and furred, but he does not inform us at what period of the disease. It was probably observed only in the last stage.

The thirst is often excessive, and even uncontrollable, and the patients usually desire cold drinks, notwithstanding the coldness of the body.

The *skin* in cholera is cold, generally clammy, and often covered with profuse cold sweats. The coldness generally commences in the nose, cheeks and extremities, and finally extends over the body. Sometimes the skin is dry though cold, and at others is said to be of natural warmth. Just before death an increase of temperature has been repeatedly observed to take place, in the trunk and head; and in almost all cases, this *partial* development of heat is found to be a fatal symptom. It is entirely unconnected with any restoration of the energy of the arterial system, or any improvement in the function of respiration. The heat, in such instances, has been observed to continue for some hours after death.

* Madras Report. † Bengal Report.

The sweat when thin, is usually poured out, in large quantity, from the whole surface of the body; but, when thick or clammy, it is more partial, and generally confined to the trunk and head. The perspiration is often free from odour; at times it has a fœtid, sour or earthy smell, which has been said to be peculiarly disagreeable.

Frequently the skin is exceedingly sensible, the patient complaining even of burning when the hand is placed on the body; applications of moderate temperature cannot be supported, and vesicatories act well. When however the skin is much collapsed, Mr. Scott says that it becomes usually insensible, even to the action of chemical agents, and hence the usual vesicatories fail in producing any effect.

"The application of mineral acids, and of boiling water, in this condition of the skin, produces little or no effect, and some patients are said not to have been sensible of the operation."

When the state of collapse is at its height, and the whole surface has become cold, the body which at first was of a slightly plumbeous tint, afterwards becomes cupreous, and finally of a very deep blue.

Rigor is an occasional occurrence in the beginning, particularly of the milder cases.*

Countenance.—The remarkable shrinking of the features, constituting the peculiar countenance characteristic of cholera, and which when once seen can never be forgotten, has been noticed by all writers. The eye is sunk back and firm in its socket, surrounded by a livid circle, but half-closed when the patient is dozing; the cornea is dull and glassy, or covered with a transparent film, the sclerotica often injected, even ecchymosed. The expression is sad, indicative of extreme suffering and complete prostration; it is truly the expression of death.

The *respiration* is usually much disturbed and laborious, and there is often the most distressing sensation of oppression and suffocation. In the early stages Mr. Scott says that it is not usually interrupted, unless from a peculiarity in the mode of attack, under which spasm seizes the muscles subservient to that function, and that in many cases terminating in death, respiration has gone on in its mechanical part with little or no interruption, except that it becomes slower and slower, and in one instance was performed only seven times in a minute. Most writers, however, and among others Mr. Orton, represent the breathing as hurried and oppressed, and Mr. Scott remarks that in numerous instances it was most distressing, and could only be compared to the most violent attacks of asthma.

* Orton, p. 35.

In many instances the breath is cold.

The air expired by those labouring under cholera contains much less than the usual quantity of carbonic acid, according to Dr. Davy only one-fourth or one-third;* and it would appear from the experiments of Dr. Clanny, Guéneau de Mussy,† and M. Barruel, that the amount is sometimes even less. The last named gentleman says that he has ascertained that during collapse no change was effected in the chemical composition of the air respired—it contained no carbonic acid, and not an atom of oxygen had been absorbed.‡

The voice is very peculiar, being husky, feeble, and sometimes inaudible; yet instances are not wanting, in which it has continued of natural strength almost to the last moment.

There is usually considerable *restlessness* in the early stages of the disease, the patient constantly tossing about and throwing his arms out of the bed, and this is said sometimes to continue throughout the disease. Not unfrequently from the commencement, and usually in the latter stages, the patient lies in the utmost tranquillity.

The *intellectual faculties* are described by some writers as continuing perfect, in this disease, often even till the last moment; it must not, however, be supposed that they retain their ordinary vigour, and remain wholly unaffected amidst the wreck of the other functions. The mind is usually dull, though there is no positive *aberration* of intellect; and the patient often exhibits a total indifference to his fate, which is far from natural.

"In a disease," observes Mr. Scott, "so highly congestive as cholera, where vertigo, deafness, and ringing in the ears, often prevail, and where very large quantities of opium and intoxicating matters have been swallowed, it is truly surprising, that the functions of the sensorium are so very rarely disturbed. It seems probable, that it is in many instances, from an inaccuracy of language, that coma has been represented as a symptom of cholera: for we find that patients, who have just been represented to be in a *comatose* state, can, with more or less facility, be roused from it; and, though he cannot overcome that retirement within himself, which constitutes so remarkable a feature of the disease, he will yet evince, by the clearness and precision of his answers, that his intellect is not destroyed."

Coma is, however, admitted by Mr. Scott occasionally to occur, and in Europe, where the patients have died in the adynamic stage, it was usually present. Delirium, according to Mr. Scott, has seldom or never been observed, unless as a sequelæ of cholera, when other and foreign morbid actions have been established; but Mr. Orton§ says, that it is not an unusual symptom. In Europe and in this country, it has not occurred except in the stage of reäction.

* Ed. Med. and Surg. Journal. † Gaz. Med. de Paris, T. III. p. 219, 278.
‡ Archives Générales, April, 1832, p. 605. § P. 33.

State of the blood.—All the writers on cholera concur in stating the blood to be of a dark colour and thick consistence, and it is perhaps one of the most constant characters in this disease.

"These appearances are very uniformly expressed by the terms, dark, black, tarry, in regard to colour; and by thick, ropy, syrupy, semi-coagulated, in respect to its consistence. The change in the condition of the blood is likewise fully proved to be in the ratio of the duration of the disease; the blood at the commencement seeming to be nearly, or altogether natural, and more or less rapidly assuming a morbid state as the disease advances. Some very rare cases are recorded, where, however, this morbid state of the blood was not observable, although the disease had been for some time established: and instances have occurred, where the blood flowed readily, sometimes little altered, where, nevertheless, death ultimately ensued. The abstraction of blood has been found by all practitioners to be very difficult and uncertain; and the uncertainty has been variously imputed to the feebleness of the circulation, to the thick consistence of the blood, and to the combined operation of these causes. The blood drawn from patients, suffering under cholera, is stated to be generally very destitute of serum, never to exhibit the appearance of buff, and to be generally disposed to coagulate quickly. Several instances, however, have occurred, where the coagulation was slow and imperfect. A great majority of the reports state unequivocally, that, after a certain quantity of dark and thick blood has been abstracted from a patient under cholera, it is usual for its colour to become lighter, its consistence to become less thick, and for the circulation to revive: such appearances always affording grounds for a proportionably favourable prognosis. In many instances, however, no such changes have been observed to accompany the operation of bleeding, while yet the result was favourable. The blood is generally found to be less changed in appearance, in those cases of cholera, which are ushered in with symptoms of excitement, than where the collapsed state of the system has occurred at an early period. The blood has been occasionally found, on dissection, to be of as dark a colour in the *left*, as in the *right* side of the heart; affording reason to believe, that in the whole arterial system it was equally changed. The temporal artery having been frequently opened, the blood was found to be dark and thick, like the venous blood: but it would appear, that this operation has not been performed in general, until the attempts to procure blood from the brachial or jugular veins had failed: little or no blood could be obtained, the artery merely emptying itself in a languid stream, not in a jet, and then collapsing. An instance is stated, where the surgeon, despairing of other means, cut down upon the brachial artery, but so completely had the circulation failed, that no blood flowed. When reäction has been established, the blood occasionally shows the buffy coat."*

We refer to our last No. p. 513, for an analysis of this fluid.

The secretion of urine is very generally much diminished, or entirely suspended; those cases in which it is secreted, are said not to be less dangerous than those where it was entirely suppressed. We

* Madras Report.

have met with two instances in which the secretion of urine was excessive, amounting to almost complete diabetes. This form, so far as we know, has not been described, it might be termed the diabetic. The fluid portions of the blood, instead of being discharged by the intestinal mucous membrane, pass off from the kidneys. In neither of the instances in which we have observed this form, was there complete collapse, but the debility caused by the discharge was very great—there was extreme lightness of the head, and giddiness, which was aggravated after each discharge of urine. There was also diarrhœa, but not the profuse serous evacuations from the bowels observed in other cases.

Reäction.—In India the cholera for the most part appears to have terminated in the cold stage either in death, or this stage was followed by prompt restoration to health. "In natives of this country," says Mr. Scott, whose able report we have had so frequent occasion to quote, "in whom there is ordinarily very little tendency to inflammatory action, the recovery from cholera is generally so speedy and perfect, that it can only be compared to recovery from syncope, colic, and diseases of a similar nature." It has also been observed in Europe that patients have recovered from collapse without the reäction transcending the normal standard, and hence some of the European practitioners, among others Dr. Ochel of St. Petersburgh,* were led to believe, with the physicians of India, that this reäction was not a necessary stage, but a secondary disease.

This stage of reäction, however, was not always absent in India; it was observed in Bengal, and is described in the report of that presidency, as rising to a great height, assuming all the characters of the idiopathic bilious fevers of the country. Mr. Scott also admits that in Europeans, in whom there is a much greater tendency to inflammation, and to determinations to some of the viscera than in the natives of India, the recovery from cholera was by no means so sudden or so perfect as in the latter. On the contrary, he remarks, it too often involved affections of the intestines, of the brain, of the liver, and of the stomach. The brain and liver, according to Mr. Spence, were the organs generally affected in India, in what he terms the sequelæ of cholera.

"In one case which I attended," he observes, "the brain became inflamed to an exceedingly violent degree after a smart attack of cholera; the patient was bled largely, both from the arms and temporal artery, with other depletory measures, before the febrile excitement could be subdued, and though ulti-

* Revue Médicale, January, 1832.

mately he recovered his bodily health, he was an inmate for two years of the lunatic asylum. Another instance occurred where cholera was succeeded by fever of the pure typhoid character, which continued three weeks before the man became convalescent. One man was attacked with jaundice, attended with much fever, and after lingering many weeks, died a maniac."*

Mr. Orton† also speaks of phrenitis supervening on this disease, and it is well known that insanity supervened in the case of the celebrated Casimir Périer.

In Europe the stage of reäction was much more distinctly marked and attracted more particular attention. It, however, exhibited considerable diversity in different cases. In St. Petersburgh most persons in this stage were affected with delirium, which soon changed into a state of coma, in which the greater number perished, leading many physicians to believe that the cholera was nothing but a species of nervous fever. In many others, neither delirium nor coma occurred, but abdominal inflammations, very often of the liver, sometimes of the parotids; in others more or less violent gastric, bilious, inflammatory fevers; finally, there were some cases in which a more or less slow convalescence immediately followed a first paroxysm which had always some resemblance to an apoplectic intermittent fever.‡

In Poland the stage of reäction was very generally observed, but its nature appears not to have been well understood, and hence, most of the writers speak of the disease terminating in, or being complicated with, typhus fever, or being often followed by that disease. Both in Great Britain and France, the reäction was distinctly observed, and was considered as a stage of the disease. In some cases, to the coldness marking the collapse, violent reäction ensued, the pulse became full, and exceedingly developed, the skin hot and disposed to be moist, precisely as in the hot stage of intermittent fever. It is not very common, however, for the reäction to be so fully and perfectly developed. Most frequently, says the editor of the *Gazette Medicale de Paris*, reäction is not at first decidedly established; it is only after several successive alternations of cold and heat that the latter persists, but in a feeble degree; the pulse becomes but little developed, the skin is dry and moderately warm. Some local symptoms next appear, most frequently of disorder of the brain, and a general state of prostration or even of stupor, which rarely however reaches the degree observed in very violent and long-continued typhoid fevers; the patient retains his intellect, and answers questions perfectly. The tongue is slightly red, but is not generally so dry and horny as in the fevers

* Med. Gaz. IX. 342. † P. 11. ‡ Ochel, Rev. Méd. Jan. 1832.

alluded to. Finally, the adynamic symptoms do not reach that degree of intensity which would be expected from the reäction which should follow such a marked degree of collapse as occurs; it may be said that the vital forces exhausted in collapse are no longer capable of an energetic contest in the second; in these subjects the pulse is moderately frequent and but little developed. In some others the local symptoms are more marked; there is delirium or a state of coma, which goes on increasing until death, if not arrested in time.*

Medicine would be truly unworthy of the name of a science, as has been justly observed by M. Bouillaud, if it limited itself to a blind and frigid exposition of the symptoms of diseases; it must connect, compare, weigh, *appreciate* these symptoms; determine which of them plays the most important part; fix, if the expression be allowable, their hierarchy, their concatenation, series, relation, and coördination. Let us see how this can be accomplished in relation to cholera.

On examining the phenomena of that disease, two set of symptoms particularly strike us; the abdominal pains, and the vomiting and purging of watery fluids—which M. B. very justly attributes to an eminently active secretory irritation of the gastro-intestinal mucous membrane—and the coldness and blueness of the extremities, disappearance of the pulse, extinction of voice, extreme prostration of the muscular forces, and the sudden diminution of the volume of the body, which he with equal propriety refers to a suspension of the vitality or organic actions in the exterior portions of the body. Now the question arises whether these two orders of phenomena appear simultaneously, or are developed one after the other; and if the latter be the case, which of the phenomena have the precedence.

"Now," says M. B. "it is incontestable that the abdominal phenomena, the vomiting and purging, or one of them precede the exterior phenomena, as the coldness, the cessation of pulse, the blue or violet tint of the skin, as well as the suppression of the different secretions, and of that of the urine in particular. How little soever one may be acquainted with physiology, it would not be difficult to find the relation of cause and effect between the abdominal and other symptoms. In fact, who is ignorant of that physiological law by virtue of which the augmentation of one secretion produces a proportional diminution in others? And who does not see that conformably to that law, it is impossible that the enormous increase in the secretion from the interior of the digestive tube, should not be accompanied by the diminution or complete suspension of the secretion of urine and several other fluids? Let us add that these secretions cannot moreover, be formed but when the blood contains a sufficient quantity of serum or

* Gazette Medicale de Paris. III. 171.

water, a condition which does not exist, when the choleric evacuations, in great part composed of serum, have been excessively abundant.

"As to the other symptoms, as the coldness, blueness, weakness of the circulation, extinction of voice, we may explain them, at least to a certain extent, on reflecting that the choleric evacuations, suddenly and prodigiously diminishing the mass of humours, and of the blood in particular, must necessarily, as in profuse hæmorrhages, (in a less degree however,) greatly weaken, not only the sanguiferous system itself, but also all the functions dependent upon this system. The secretion of so enormous a quantity of fluid cannot moreover be effected without a considerable consumption of the nervous power, which naturally presides over these functions, and of which the ganglionic nervous system appears to be the depository. Is not this kind of deperdition of the ganglionary nervous power effected, in part, at the expense of the innervation which animates the circulatory organs? Be this hypothesis, to which I do not attach the least importance, correct or not, what is certain is, that the sanguineous mass, almost totally deprived of its aqueous or more fluid portion, then presents a thickening, a viscidity which constitutes a physical obstacle to the circulation. The mass of blood having been thus considerably diminished, and the viscidity of the liquid which remains, opposing a certain obstacle to the organic power which moves it, it is not at all astonishing, even not taking into account the weakening of the nervous power, that the pulse should be enfeebled, gradually sink and ultimately disappear in the arteries most remote from the circulatory centre. This suspension of the arterial circulation, joined to the immense deperdition of caloric produced by the choleric evacuations, explains in its turn the coldness and the livid or blue tint, of the parts thus deprived of arterial blood, that is, of the vivifying principle of all the organs, of the principal conductor of the heat which penetrates them.

"There is yet another element, which must not be entirely neglected in the solution of the problem under discussion. We have seen that either on account of the weakening of the mechanical powers of the circulation, or on account of the new properties of the blood deprived of much of its serous portion, or finally, in consequence of these two causes combined, the chemical phenomena of respiration are performed in only an imperfect manner. Now, there results from this obstacle to the oxygenation of the blood, a particular asphyxial condition which must exert an influence over the violet or livid colour of certain parts of choleric patients. Let us add that the intensity of this tint should be in proportion to the profuseness of the choleric evacuations, (I do not allude to those which are sanguinolent,) which deprive the blood of its aqueous element, leaving its colouring matter entire; for it is clear, that the latter being no longer diffused in a sufficient quantity of water, must necessarily appear deeper."

Such is the physiological explanation of the symptoms offered by M. Bouillaud, and if it does not embrace all the phenomena, it may be made to do so by a slight extension, and it is the most satisfactory yet presented, fulfilling more of the capital conditions which we have a right to exact in all medical expositions. Perhaps too little account is taken of the nervous system, but it must be confessed that implicit confidence cannot be claimed for any explanations founded upon the functions of that apparatus, with the imperfect knowledge we have of

the subject. But may we not, to explain the spasms and neuralgic pains—the sudden death that sometimes occurs with but slight or at least without profuse evacuations, and the complete interruption of the relations and communication between the different apparatus by which the unity of the organism is destroyed, have recourse to a derangement of the ganglionic nervous system? It is the office of that apparatus to connect the various organs of the abdomen and thorax, and to place them in sympathetic relation; it is the chief agent in the maintenance of these organs in the performance of their functions, and the medium of communication between them and the cerebro-spinal nervous system.

Muscular contraction requires nervous stimulation for its accomplishment, and the production of convulsions by worms and indigestible matters in the alimentary canal, at once points out an irritative impression upon the ganglionic nervous system of the splanchnic apparatus, conveyed to the cerebro-spinal system, for an explanation of the spasms in cholera.

Extreme congestion of the secretory apparatus of the intestinal tube, and the consequent proportional deficiency in the other organs of the vital fluid—thus destroying the organic actions in the former by the overwhelming congestion, and arresting it in the latter by the debility caused by the abstraction from them of their nutritive element—may perhaps explain the sudden death which sometimes occurs without any profuse evacuations. But where life is sufficiently protracted in these cases, and always where complete collapse is established, we observe a phenomenon which seems to refer to the sympathetic nervous system for an explanation. We allude to the complete dismemberment of the different organs—the entire destruction of their connexion and sympathetic relations—so that the suffering organ is unable to relieve itself by radiating to some other, a portion of the irritation which is destroying it, and remedial impressions are no longer transmitted from one organ to another, medicines acting solely upon the part to which they are applied—constituting, as we shall hereafter see, the great obstacle in the treatment of the disease.

It being one of the functions of the ganglionic system to connect the various organs together, their disjunction manifestly indicates a suspension of that function; but it is equally certain that this lesion of the nervous apparatus is *secondary* to that of the digestive, for, as is correctly remarked by M. Gendrin, to give to the nervous symptoms of cholera the importance of primitive and dominant phenomena, would be contrary to all observation, which shows that the violence of the nervous symptoms bear no relation to the intensity of the disease.

We need not enter more fully into the physiological explanation of the phenomena of cholera at present, as we shall have to recur to it again, when considering the pathology of the disease.

If all derangements of the normal actions were indicated by constant and unequivocal symptoms, and the degree and extent of morbid lesions could be determined by the violence of these symptoms—their physiological explanation would conduct us at once to a correct pathology. But as the symptoms furnish uncertain information of either the degree or kind of morbid actions, and moreover, as extensive and even fatal lesions frequently occur without any appreciable external manifestations, a pure physiological system of pathology becomes impossible, and we are compelled to resort to other sources to supply the necessary data for a complete pathology. These are furnished by an examination of the body after death—let us then see what information is furnished by the post mortem examination of cholera patients.

The lesions observed on examination of the body after death from cholera, are found to vary according to the stage of the disease at which the patient dies, and their extent to be also influenced by the duration of the attack. When the patient is carried off after only a few hours illness, little time has been afforded for appreciable disorganizations to be effected, and the morbid changes are of course less striking than in those cases in which the patient has survived for a longer period, but manifest morbid alterations are always met with. We shall endeavour to sum up as briefly as possible these lesions, and shall commence with those observed in persons who have died in the period of collapse.

Upon opening the abdomen, the peritoneum is found to be quite dry, and we may remark, that all the mucous membranes are in the same condition, and that little or no serum is found in their cavities. Externally the digestive tube is observed to be very much injected, and of a rose or violet tint. The different portions of this canal are also often more or less dilated by their liquid or gaseous contents. Sometimes we find a more or less considerable contraction either of the stomach or intestines. The intestinal parietes in some of their convolutions are commonly a little thickened, nearly as after general peritonitis, and may be said to be slightly infiltrated.* Intussusceptions are sometimes met with; M. Gendrin met with them in the ilium in three cases.

Observers differ in their descriptions of the colour of the mucous

* Bouillaud, p. 252.

membrane of the digestive organs. M. Gendrin says that from the mouth to the anus it is generally of a livid tint, but admits that in a third of the cases evident traces of inflammation are met with;* whilst M. Bouillaud asserts that it is almost constantly red, with red points, and arterial and minute capillary injection.† The consistence of this membrane is not generally altered, but it is by no means uncommon to meet with it softened, thickened or thinned in places of greater or less extent.‡ Another very remarkable lesion of this membrane is its putrid or gangrenous disorganization. M. Bouillaud has met with this lesion once in the ileum, and six times in the large intestine; and Mr. Orton met with it in one case in the small intestines.§ M. Sandras states that there are often found in the lower part of the small intestines and in the large intestine, plates of a black-red colour, like ecchymoses, sometimes of so dark a tint that the German physicians considered them as more or less decided gangrene—these plates were from a few lines to several feet in extent.‖

The mucous membrane of the stomach over its whole circumference presents a multitude of small, white granulations, slightly grayish, presenting a very regular hemispherical projection. These granulations have no regular arrangement, and every where disseminated; they are still more numerous in the duodenum and jejunum than in the stomach. M. Serres says that they are so numerous and developed in the small intestines that the whole mucous membrane seems as if made up by them;¶ their number decreases towards the large intestines. On dissection these granulations are found to be the follicles of Brunner distended by a white, turbid fluid, and three times their natural size. This development of the follicles of the mucous membrane appears to be almost, if not constantly, met with, even when death occurs within twenty-four hours.

"The isolated follicles, or the glands of Brunner," says M. Bouillaud, "are those particularly which we observe more or less tumefied and developed; nevertheless it is not uncommon to meet at the same time that lesion in the plates of Peyer or the clustered follicles. This hypertrophy, this species of erection of the follicles of the mucous membrane of the digestive tube prevails sometimes through the whole extent of this immense membrane; and this gastro-intestinal eruption, sometimes distinct, at others confluent, imitates to a certain extent the variolous eruption in its first stage. The number of follicles developed, when the eruption is confluent, is truly incalculable. We will only say, that any one who has seen this kind of eruption, will not consider the calculation of M. Lélut, by which the whole number of follicles in the alimentary mucous membrane is estimated at forty-two thousand, to be exaggerated. The

* P. 94. † P. 254. ‡ Bouillaud, p. 255. § P. 34. ‖ P. 37, 38
¶ Gaz. Med. de Paris, Tom. III. p. 206.

size of these follicles thus tumefied varies from that of a small millet-seed to that of a hemp-seed. Their form is rounded and granular. Many of them have a blackish point at their centre. There are some which do not offer this character, and MM. Serres and Nonat, who have published some researches of great interest on the subject under consideration, think, as is known, that these granulations are not follicles, but *intestinal papillæ* in a state of tumefaction. We have studied with some care this point of pathological anatomy; and we are certain that an immense majority of the granulations with which the mucous membrane is covered, are really enlarged follicles, but we will not affirm that those on the summit of which there is no perceptible black point, and which marks the opening of follicles, are actually the same. The colour of follicular granulations is commonly a grayish-white; at their basis a more or less considerable injection is frequently met with." pp. 256, 257.

Incipient ulcerations are also occasionally met with in the intestinal follicles.

The whole intestinal tube is generally more or less distended with a whitish, turbid fluid similar to that discharged by vomiting and stool, and which fluid is in some degree pathognomonic of cholera. That fluid is to the disease, what the effusion into the pleura is to pleurisy, that into the peritoneum to peritonitis, &c. In the stomach, besides the choleric fluid there is found, usually a very considerable quantity of glairy mucus, more or less adherent to the mucous membrane; sometimes in place of this a layer of creamy matter is found, similar to that hereafter to be noticed as met with in the intestines. M. Bouillaud says that he has several times seen in the stomach a yellowish or greenish bile.

In the small intestines, two different kinds of liquid are contained, one the choleric fluid, the other a fluid, sometimes of a dark reddish colour, at others rosaceous, more frequently of the colour of chocolate or of lees of claret, the tint depending upon the greater or less proportion of blood which concurs to the formation of this liquid. It has more or less density, and is less abundant than the choleric fluid. It is not unusual to find both these fluids in the small intestines, in which case the whitish commonly occupies the upper convolutions, whilst the lower are filled with the reddish or sanguinolent fluid. When the intestine is emptied of these fluids, there remains upon the surface of the mucous membrane a layer of whitish, or grayish-white or sometimes yellowish, creamy matter, it is easily removed by a stream of water. Gas, lumbrici, and a greater or less quantity of yellowish or greenish bile are also met with.

The *large intestines* contain also the two fluids found in the small ones; these fluids are, however, thicker and more turbid than in the former. M. Bouillaud says that both these fluids are sometimes found in the

large intestines of persons in whose small intestines there is only the whitish liquid, but that the reverse does not occur, and that whenever the small intestines contain a reddish fluid, we are almost certain to find the same in the large intestines. The layer of creamy matter is thinner in the large than in the small intestine. In some cases a fluid resembling puriform mucus was met with. Gas and lumbrici are more frequently found in the large than in the small intestines, but bile is scarcely ever seen in the former.

The *liver*, *spleen*, *pancreas*, *mesenteric ganglions*, *kidneys and bladder*, present no lesion, except where the disease is complicated with some other; these organs are, however, more injected, and rather of a more violet hue than in their normal state. The gall-bladder is filled, and often distended with a viscid bile differing little from that usually found in it. The liver is generally injected with blackish, tolerably fluid blood; it is not, however, augmented in size. The ramifications of the vena porta are gorged with black, viscid blood.

The *spleen* is usually small and not congested.

The *kidneys* are most commonly injected with black blood, but unaltered in their tissue; the pelvis and ureters are empty; we remark only on their parietes a creamy, viscid matter, which also flows from their tubuli uriniferi on pressure.*

The *urinary bladder* is almost constantly empty, and firmly contracted under the pubis. Its mucous membrane is covered with the same creamy matter found in the intestines and kidneys.

The *heart*, *arteries* and *veins*, except in cases of complication, offer no notable lesion of structure. The arteries are nearly empty; in the larger ones, and in places only, a dark, viscid, imperfectly coagulated blood, precisely similar to that found in the veins, is met with. The whole venous system is gorged with blackish, viscid, semi-coagulated blood, forming nevertheless in some cases a clot of sufficient consistence to be drawn from the vein like a cord. This engorgement is the more marked the nearer the vessels are to the heart; it is especially considerable in the superior vena cava, the subclavians, the internal jugular, and the vena azigos. The heart, especially its right cavities, are generally gorged with blood similar to that found in the veins. Its proper veins are exceedingly distended with the same kind of blood.

The *lungs* are often flaccid and collapsed, frequently emphysematous, sometimes engorged in the posterior portion of their tissue; in these last cases M. Gendrin says that the bronchial mucous mem-

* Gendrin, p. 96.

brane is of a deep livid red.* In one case M. Bouillaud found on its surface a creamy layer analogous to that which covers the intestinal and vesical mucous membrane.

The *cerebro-spinal nervous system*, except in cases of complication, presents little or no appreciable lesion. The membranes of the brain and spinal marrow are healthy; their veins are injected with black, viscid blood. The pia mater at the posterior portion of the cerebral hemispheres, upon their convex surface and upon the cerebellum, presents several patches of true ecchymoses and well-marked sanguineous infiltration.†

The substance of the brain and spinal marrow preserves its normal consistence and texture; the medullary portion is slightly dotted with numerous minute drops of black blood. The nerves which go off from the brain, medulla oblongata and spinal marrow, present no alteration at their origin. M. Bouillaud says that he has recently dissected the nerves of the lower extremities, in a patient who had experienced violent cramps, and that he found them in a state of the most perfect integrity.‡

The phenomena of cholera appearing to indicate a suspension of function in the *ganglionary nervous system*, many careful investigations have been instituted for the purpose of determining the condition of this system after death. M. Delpech asserts that he found in his examinations, evident traces in the semilunar ganglions, of the physiological alterations they had experienced; that they were often enlarged, red, more or less injected, and sometimes remarkably softened, and that the blood with which they were injected was red, whilst the blood in the capillary system over all the rest of the body was black. The solar plexus, he says further, was always in a more or less abnormal condition, but always recognisable by the size of the nerves which compose them, often by the red injection of their neurilema and sometimes even by the softening of the nerves which form them, so that they break under the slightest effort or even the least pressure.§ The researches of Mr. Lizars, of Edinburgh, and M. Halma-Gand, appear to sustain this statement; but the investigations of MM. Gendrin, Bouillaud, Louis, Andral, and indeed all the Parisian pathologists are entirely opposed to it.

M. Bouillaud says that the important part which the semilunar ganglion and the plexuses which originate from it, are made to perform in cholera, induced him to attentively examine these parts in almost all the cholerics who died in his hospital practice, and he declares

* P. 90. † Gendrin, p. 97. ‡ P. 266. § Pp. 197, 198.

that the ganglionic nervous system did not in a single case present any lesions of structure. In some cases, the ganglions and the plexuses had preserved their normal white or grayish-white tint. But most frequently he observes—

"The semilunar and cervical ganglions, like many other organs, were of a rose or violet tint, with or without manifest injection; this slight lesion of colour was more evident on the exterior than in the interior of the ganglions." p. 267.

M. Gendrin found the semilunar ganglions and all the ganglions and nervous plexuses perfectly healthy.

"Their tissue has," he says, "its natural colour and density, if we take care to dissect these so as to prevent the sanguineous imbibition which results from the effusion of blood from the veins which are necessarily divided in the examination. It is however observed, that the nervous ganglions in the bodies of choleric subjects, often present a reddish tint which is often found after many diseases and constantly in asphyxia." p. 97.

M. Begin has indicated a reddish colour of the *bones* and teeth as occurring in cholera, and this condition has been since observed by others. M. Gendrin states that he has found the osseous system, especially the spongy bones, very decidedly injected.

"This injection," he adds, "is the more manifest, as the bones receive, as is known, a considerable quantity of venous blood, which even appears deposited in their cells without the intervention of any membrane. The teeth present this injection; thus their root and the half of their crown are of a red tint, which causes them to be rejected by dentists for the fabrication of false teeth. This tint does not show itself until some hours after death; it then increases for two or three days and becomes finally permanent. Persons who trade in teeth, have remarked this red tint in the teeth of those who have died of several other diseases; they say for instance, that it constantly occurs in the teeth of those who have died of variola."

According to MM. Bouillaud and Rayer, however, this injection of the osseous system is by no means constant in cholera.

The *exterior habitude* furnishes some phenomena worthy of notice. The body is usually exceedingly rigid, and the muscles often contracted and prominent. A very remarkable phenomenon, noticed by all writers, is the spasmodic contraction of the muscles for some time after death, causing movements of the limbs, and contortions of the features. Another equally singular is, that some hours after death, the body, which had previously resisted external heat, often becomes less cold than it was at the last moment of life, and is said sometimes even to have a *general warmth* diffused over it, although removed to an apartment below 50°; in one case Mr. Harwich says, that the temperature of the body two hours after apparent death was 105° Fah.*

* London Lancet, March 31st, 1832.

Such are the principal anatomical phenomena observed in subjects who have died during the stage of collapse or asphyxia; but when death occurs in the period of reäction, very different lesions are met with on dissection. We no longer find in the digestive canal the white fluid; in its place we meet with a yellowish, semifluid substance, having the odour of fæcal matter. The granular eruption of the mucous membrane of the digestive tube is less prominent, and is found less constantly. We sometimes observe, however, incipient ulceration of the follicles. The mucous membrane is exceedingly red, and presents unequivocal marks of inflammation. The stomach is often contracted, almost empty, containing only a little mucus or bile, presenting numerous rugæ on its internal surface, and the membrane thus wrinkled, presents a diffused, bright, arterial redness, as well as a capilliform injection and red points. The same redness also occurs in various parts of the intestinal mucous membrane.

The bladder, instead of being empty and contracted, is often distended with urine, and we no longer meet, either in the bladder or kidneys, any of the creamy matter found in them during the stage of asphyxia.

The nervous centres and their membranes now exhibit constant and often serious lesions. Their membranes are gorged with blood and serum. The pia mater is so infiltrated with serum, that it raises up the arachnoid, and gives to the surface of the brain a gelatinous appearance. Thus infiltrated with serum, this membranous net-work is much thicker than in its normal state. The ventricles are distended by a limpid, slightly viscous serum; and the plexus and tela choroidea are gorged with it, and at the same time injected like the pia mater. The cerebral substance is injected; presents more red spots than in the algid period, and in some subjects it is less firm than in its normal state.

In some cases the spinal marrow is slightly softened.

The blue or livid colour of the body has nearly or entirely disappeared.

If the lesions which present themselves in those who have died in the stage of collapse be compared together, it will be found that the most serious and important are those of the digestive tube. In fact, there is nothing met with in any other apparatus, that can be put in comparison with the choleric fluid, and the enlargement of the follicles, not to mention the redness, gangrene, sanguineous infiltration, &c. which frequently occur. The examination of the body after death, accords thus with the analysis of the symptoms, in showing that the principal element in cholera is the affection of the digestive passages.

The question now presents itself, which of the lesions observed after death are the primary ones, and what is their nature. Those of the alimentary canal being the most numerous and severe, it would appear justifiable to conclude, that they were the primary ones; and this conclusion is confirmed by an analysis of the symptoms which shows that the manifestations of gastro-intestinal derangement precede all the other symptoms.

The only other lesion, moreover, of any consequence, or which can be suspected of preceding the gastro-intestinal disorder, is the change in the condition of the blood. Now the investigations of Dr. O'Shaughnessy, who has availed himself of the second eruption of cholera in London, to repeat his chemical inquiries relative to this disease, on a most extensive scale, and with a view, if possible, to decide the question, whether the alteration of the blood be primary or secondary, and to ascertain what are the conditions of the blood in the several stages of the disease, conclusively show, that—

"1st, in the *premonitory* symptoms, no alteration of the blood exists; 2d, in the cases in which the evacuations are trivial, and *cramps* form the prominent symptoms, the blood is also unaltered; 3d, the alteration of the blood consisting in loss of water and saline matter, only occurs in the collapse cases *preceded* by excessive rice water evacuations; 4th, this alteration of the blood gradually disappears, or increases in the fever stage, according to the aggravation or amelioration of the symptoms."*

The rigorous analysis of the symptoms during life, and of the derangements met with after death, concur thus in pointing out as the lesion of the organism constituting cholera—as the constant disorder, that which is never wanting in this disease—an effusion upon the inner surface of the intestinal tube of a serous fluid, which is afterwards rejected by vomiting and purging. This secretion is dependent upon an alteration, equally constant, at least in its early stage, which alteration consists in the development of the secretory follicles disseminated over the digestive tube. The exaggerated secretion of the intestinal follicles must have been necessarily preceded by an active afflux towards these follicles, and it must also be necessarily accompanied by that state of turgescence of the secretory organs accompanying all augmented secretions—an active state to which Bordeu has called the attention of physicians, and of which post mortem examinations have always shown the traces when death has not occurred too late.

This fluxion towards the follicles of the digestive tube is among

* London Lancet, Aug. 11, 1832, p. 603.

the earliest effects of the cause, whatever it may be, productive of cholera, and seems to be the result of the well-known law, *ubi irritatio, ibi affluxus.* Starting from this orgasm of the follicles alluded to, we have little difficulty in showing how all the phenomena of cholera follow as natural results.

These follicles gradually increase in size under the influence of this active fluxion to them, their secretions are augmented, and thus is produced the serous diarrhœa which precedes the cholera in most instances. As soon as the secretion is increased in the whole digestive tube, sufficiently to quickly substract from the blood a large portion of its elements, the choleric symptoms appear. Previous to this, the loss which the blood suffers is slight, the circulation repairs it continually, and this loss could not suffice to alter this fluid, rapidly and so as to be immediately irreparable. Thus, the intensity of the general symptoms is in proportion to the *suddenness* of the serous secretions. A person in whom these secretions occurred slowly, would suffer less at the end of three or four days, although he may have lost a large quantity of serum, than another would be at the termination of an hour, in whom the deperdition would have taken place suddenly, even though he had lost less serum. For the same reason the disease becomes very speedily fatal in those who have scarcely any or no discharge by vomiting or stool, but whose alimentary tube is suddenly filled by the product of the secretion, and this especially in persons whose vital powers are enfeebled by previous disease, irregular habits, &c.

Debility, coldness of the extremities, feebleness of the pulse, oppressed respiration, and syncope, are the immediate results of all sudden losses of blood; it is quite intelligible then how they occur in a disease in which the blood is suddenly deprived of some of its elements; they also occur in excessive serous diarrhœas, and in ordinary cholera. If we add to this the thickening of the blood, we will have all the phenomena of epidemic cholera.*

In proportion as the blood is rendered thick and viscid, and the propulsive power of the heart enfeebled by the excessive choleric secretions, will the circulation be diminished. The diminution of the circulation through the lungs causes derangement of respiration—this function is imperfectly performed—hence the proper changes of the blood in the lungs are imperfectly and ultimately not at all effected, and the portion of this fluid, which reaches the left side of the heart,

* Gendrin, p. 136.

is similar to that sent to the lungs by the right side of that organ. The suspension of the general circulation, and the dark colour of the blood produces a blueness or bronze colour in those parts, in which the thinness of the skin permits the colour of the blood to be partially seen—as occurs in asphyxia. The circulation being suspended, animal heat can no longer be generated, and hence the body becomes cold. The lessening of the mass of fluids by the choleric evacuation, causes the shrivelling of the fingers and toes, as is observed in some profuse hæmorrhages; our esteemed colleague, Professor Dewees, notices it as occurring in uterine hæmorrhage. Thus are the phenomena of collapse produced.

In some cases the profuse secretions from the bowels are arrested, or diminished, either spontaneously, which is rare, or from the effect of remedies, and the circulation then has a tendency to be reëstablished, unless the blood has been altered to such a degree that all reëstablishment of the circulation is impossible—we have thus reäction—a febrile action, in which the circulation of the blood is accelerated, and that fluid propelled towards the lungs, there to be decarbonized, and towards the heart to be united with the fluids rapidly absorbed, as soon as the function of absorption is restored. The immediate result of this reäction is to repair the disorders occasioned by the intestinal secretions—the excessive secretion from the bowels having abated, and the principles essential to nutrition being supplied to the blood, the secretion of urine, of bile, &c. are reëstablished.

The difficulty to the establishment of reäction is proportional to the alteration which the blood has undergone, and the evils which follow this reäction result, at least in great measure, from this change in the blood. The brain here suffers more than any other organs, except the digestive, because the venous circulation is carried on in it by a peculiar apparatus, which renders the progression of the blood slower and more difficult, and which thus easily leads to congestions. This congestion persists notwithstanding the reäction, if the viscid and semi-coagulated blood of the sinus presents an obstacle to the reestablishment of the cerebral circulation. Congestion is reproduced in the reäction, probably because while there is an augmentation of the activity of the arterial impulsion in the brain, the circulation through the sinuses is still retarded.

That the ganglionic nervous system performs a more or less important role in cholera is probable, since there is no irritation of the abdominal viscera of any degree of intensity, which cannot reäct

upon that system; but when we reflect upon the constant, extensive and profound lesions of the gastro-intestinal mucous membrane, and the rarity of any notable lesion in the abdominal ganglions and plexuses, we must admit that the affection of the ganglionic system can only be consecutive to that of the apparatus on which its ramifications are expanded.

Such is the anatomical history of the lesions in cholera, and it is in accordance with all the facts observed, and leaves none of the phenomena unaccounted for.

We have considered the fluxion to the secretory follicles of the gastro-intestinal mucous membrane as an active one, and the increased secretion from these vessels to be the result of an exaggerated action, and this view is in strict accordance with what we observe to result from stimulants, productive of increased secretions in mucous membranes. Some pathologists, not finding in the gastro-intestinal mucous membrane those appearances and alterations which *they* consider essential to inflammation, have assumed as the primary lesion in cholera, a stasis of the blood dependent upon enfeebled action of the heart, and referred the choleric fluid to a passive exhalation or leakage from the vessels. Not to mention other and insuperable objections to this theory, it is sufficient to state that if an adynamic state of the heart were the primary disorder in cholera, it should commence with the disease, and all the others should be consecutive, which is not the fact. Further, in cholera all the secretions except that from the intestinal follicles, are suppressed; now, if this suppression were owing to adynamia of the heart, the former secretion ought to be equally suppressed. If the choleric fluid was produced by a mere leakage from the vessels, it should consist of the fluid portion of the blood unaltered; but this is not the case; all the analyses of that fluid showing it to contain an excess of saline materials, and of *fibrine*, whilst the blood is found to be proportionally deficient in those elements.

MM. Louis and Andral appear to lay great stress upon the frequent absence of any softening of the mucous membrane, as proving the non-inflammatory nature of the secretory action of that membrane in cholera. Softening is, however, only one, and by no means a constant result of inflammatory action, and even if it were, MM. L. and A. would still have to prove, to sustain their doctrine, that an exaggerated action in the secretory vessels must necessarily be accompanied by the inflammatory state of the *nutritive* vessels, productive of softening.

Other pathologists taking their notions of the essential phenomena

of inflammation from those exhibited in phlegmon, and not finding constantly redness of the gastro-intestinal mucous membrane, have adduced this circumstance in support of the same views. Here again no distinction is made between the secretory and the nutritive vessels. It seems little surprising that the prodigious demands made by the secretory vessels, should divert to themselves all the supplies of blood; and it is well known that the moment the intestinal secretions abate, and the demands for a supply of materials for these secretions consequently lessened, we have injection of the nutritive arteries, softening, ulceration, and other phenomena of inflammation of the mucous tissue.

The secretory action of the mucous follicles is then an active one, and that its character is inflammatory we have the strongest possible evidence in the fact of coagulable lymph being one of the constant products of this action. The analysis of the choleric fluid by Dr. Christie in India,* and Dr. Clanny in Sunderland, show the presence of coagulable lymph in that fluid; while the analysis of the blood by Dr. Thompson shows a remarkable deficiency of fibrine in this fluid, in one case the quantity being only one-third, and in another only one-tenth, that which exists in healthy blood. Now, the effusion of fibrine is admitted on all other occasions, as in croup, peritoneal dropsies, &c. as evidences of inflammatory action having existed, there is no reason why it should not be received as such in this case.

Cholera is then, as believed by M. Bouillaud, a secretory irritation of the follicles of the gastro-intestinal mucous membrane. This form of gastro-intestinal irritation differs from others, according to M. B.—1st. As regards its symptoms, in the abundance of the evacuations, and the peculiar qualities of the rejected matters. 2d. As to its anatomical alterations, which are the immense extent of the gastro-intestinal irritation which often extends through the whole tube; the presence of two fluids, elsewhere described; the distinct or confluent eruption of the intestinal follicles, and not unfrequently gangrene of certain portions of the irritated membrane.

"It is especially in consequence of the terrible rapidity with which so vast an irritation occurs, and of the prodigious deperdition of the fluids which follows this secretory irritation, that we see the strength suddenly disappear, the circulation diminish, the extremities become cold, the features alter, and in a word, the patients to become *cadaverized.*" p. 285.

If the views we have given of cholera be correct, the indications of cure, are in the initiatory stage to allay the irritation of the mucous

* Observations on the Nature and Treatment of Cholera, &c. &c. By Alex. Turnbull Christie, M. D. &c. Edinburgh, 1828.

follicles, and arrest the determination of blood to them; for by accomplishing this we shall prevent the exaggerated secretion, the source of the subsequent evils. In the onset of the disease, the indication is to arrest the excessive secretion, which is to be accomplished by the same means. In the collapsed or blue stage we have additional indications, viz. to supply to the blood the elements which it has lost, and to restore the circulation. In the adynamic stage various indications are presented; we have to sustain the reäction when deficient, and to moderate it when in excess; to relieve the congestion in the brain, and arrest the inflammatory disorganizing actions going on in the digestive tube. Let us now inquire into the means that have been employed to accomplish these objects.

In the preliminary stage of cholera, the irritation is to be allayed, and fluxion to the bowels arrested by soothing remedies and revulsives, among which we may enumerate absolute diet, demulcent drinks, opiates, bleeding, mustard pediluviæ, &c.

"An immense majority," says M. Bouillaud, "of both hospital and private practitioners, are now in favour of the soothing, antiphlogistic method, aided by opiates and astringents in moderate doses. I can affirm, that I know of no case of mild cholera treated conformably to this simple and reasonable plan which terminated fatally, and I have heard very distinguished practitioners affirm the same.

"Thus then, as soon as an individual experiences diarrhœa, colic, or vomiting, with sensation of anxiety, oppression, or real pain in the epigastric region, he must at once be put upon a rigid diet; leeches should be applied to the epigastrium, abdomen or anus; if the patient is young, vigorous, and plethoric, blood is to be taken from the arm; demulcent drinks, gum julep, with a few drops of laudanum, are to be ordered: and repeated small enemata with four or five drops of laudanum in each administered; cataplasms or fomentations are also to be applied to the abdomen.

"It must be constantly borne in mind, that it is in consequence of having neglected or badly treated a simple diarrhœa, that many persons have been affected with intense cholera, to which so many have succumbed. This fatal occurrence will be prevented by insisting upon the preceding method, employed from the appearance of the first symptoms. It has the immense advantage over every other method, of not subjecting the patients to any catastrophe, and it does not constitute one of those games of *double or quits*, which the prudent practitioner never plays. Doubtless, in the stage under consideration, recourse has been often had, with an appearance of success, to emetics, and even to purgatives. But has it never happened that this treatment has excited or hastened an attack of intense cholera? Some facts cited in different parts of this work, seem to authorize us to answer that such has been sometimes the case. Nevertheless, we find even at the present moment that some physicians crowd the journals with articles, in which they rapturously praise the marvellous effects of purgatives, as a general method of treating cholera! The time will come, I

hope, when such deplorable precepts will no longer seduce the ignorant, and death will not be a gainer by it." pp. 321, 322.

Not a few cases have recently been recorded in the foreign journals of cholera being excited by purgatives, and several occurring in this city have come within the notice of the writer of this article. Two instances are related by M. Voisin, Intern de St. Louis, in the Gazette Médicale de Paris, for the 12th of June, 1832. The first was M. Dœuf, his colleague, who took large doses of resin of copaiba to act as a revulsive on the large intestines for the cure of gonorrhœa, and who was attacked with cholera, and died in fourteen hours. The second was a patient whose thigh had been amputated, and who was doing exceedingly well. Two ounces of castor oil were given him for the removal of constipation, which brought on vomiting and purging with cramps, &c. and the patient died. The stump and joint on examination presented nothing that could in the least account for the death. The patient unquestionably died of cholera. One case which has been related to us, is too striking not to be noticed. A robust labourer applied to an apothecary in this city during the prevalence of cholera for a dose of calomel and jalap, for the relief of constipation, and uneasiness in the bowels. The apothecary advised him not to take so powerful a purgative, but the man persisting, the dose was given to him, and next day he was a corpse. Other instances of the danger of purgatives might be adduced were it necessary. Where it is important to empty the bowels of any ingesta, a small dose of oil, (half an ounce,) with twenty or twenty-five drops of laudanum, we have found to answer the purpose.

In the second stage or onset of the disease, characterized by the secretion into the bowels of the choleric fluid, the treatment is nearly similar to that recommended in the first stage. To allay the gastro-intestinal irritation, demulcent drinks, as gum water or rice water, and enemata of the same with a small portion of laudanum are to be administered; small doses of morphium may also be given by the mouth. Care must be taken, however, not to administer opiates in such doses as to suppress the evacuations too suddenly, and before revulsion is effected. The temperature of the drinks should be that most agreeable to the patients; when there is great heat in the epigastrium, small pieces of ice taken into the mouth will be found to allay this heat, and also relieve the vomiting. As revulsive means, venesection, topical depletion by leeches or cups, fomentations to the abdomen, and sinapisms to the extremities, or mustard pediluviæ, are to be employed.

M. Gendrin says that in this stage of the disease he bleeds, as a means of revulsive depletion, gives a demulcent drink, as rice water,

administers enemata rendered slightly narcotic, and aids these measures by sinapisms or stimulating frictions to the extremities.

When the reäction commences, he recommends, if it is moderate, not to disturb it, but to favour the crisis by emollient drinks. If it be too violent, the bleeding is to be repeated, or leeches applied behind the ears if the head is threatened, or upon such parts of the abdomen as may become painful.

"I have not lost," he adds, "a single patient with simple cholera, whom I have treated in the phlegmorrhagic stage, and I have constantly found that it was by the mode of treatment that I have just indicated, that the disease yielded most promptly, and that convalescence, always so troublesome from cholera, was most easily accomplished."

M. Gendrin has also administered in this period small doses of narcotics by the mouth and anus, with great advantage; but he has sometimes had to regret their arresting too suddenly the evacuations. M. G. gave the sulphate of soda in one case with the effect of arresting the phlegmorrhagia, but an obstinate gastro-enteritis was the consequence.

"To modify the intestinal excretion," observes M. G. "by narcotics, astringents, and various stimulants, while we do nothing to relieve or divert the secretory fluxion to the digestive tube, is to expose ourselves to substitute for a phlegmorrhentery a most serious gastro-enteritis, or to excite a violent febrile reäction which will produce serious disorders in the head and abdomen." p. 183.

In the collapsed or blue stage, especially in its commencement, we have still the indication to fulfil, of abating the secretory irritation and the fluxion to the digestive mucous membrane; the remedies already recommended for that purpose are to be employed, but with particular reference to the condition of the patient at this time. Venesection is here to be resorted to with great caution. It must be remembered that the object of this remedy is to produce revulsion, and that this may be effected, there must be a certain degree of vigour in the circulation. In robust and plethoric subjects then, whose pulse is still to be distinctly felt at the wrist, a vein may be opened in the arm, and if the blood flow freely, and the pulse rises, or at least does not sink, a considerable quantity of blood may be detracted; but if, on the contrary, the pulse sinks, and the blood comes away only guttatim, the vein should be closed. The object of venesection is not now to be obtained. The blood no longer flows from the congested vessels to supply that taken from the vein in the arm—we do not relieve congestion or divert the fluxion from the digestive passage; the small quantity of blood we obtain is taken from that still circulating in the system, and however deteriorated in quality, its

quantity cannot be lessened with safety until the circulation is reëstablished.

When it would not be prudent to take blood from the arm, in consequence of the feebleness of the pulse, and the exhaustion of the patient, topical depletion by leeches or cups to the abdomen, may often be resorted to, with the effect of relieving the abdominal congestion and facilitating reäction; but when the collapse is complete, it is most frequently as difficult to detract blood from the surface as from a vein.

The patients even in this stage, when cold and pulseless, generally have the utmost repugnance for hot and stimulating drinks; they, on the contrary, incessantly demand cold drinks, and their desires should be gratified. Small pieces of ice, cold lemonade or gum water, or pure water, should be given them. Mucilaginous enemata should likewise be administered. Some of the English practitioners employed copious enemata of warm water, and they say with advantage. They may act beneficially as fomentations to the irritated intestines, and they also supply fluid for absorption, and when comfortable to the patient may be used. When there is, however, a sensation of intense heat in the abdomen, we think that *cold* mucilaginous enemata would be preferable, and should a favourable case present, we would not hesitate to resort to them—applying at the same time warm fomentations externally.

Bottles of warm water should be applied to the soles of the feet, and fomentations rendered somewhat stimulating to the extremities and abdomen.

Such are the principal measures to be employed for the primary lesions; but in this stage secondary disorders occur, which entail fatal results, and require the attention of the practitioner. The most important of these is the condition of the blood, which, deprived of a great proportion of its serum, saline matters and fibrine, no longer circulates, and hence coldness of the body, difficulty of respiration, &c. To supply to the blood some of its lost elements, salt and water have been injected into the veins, and with the effect most generally of reviving the circulation, relieving the breathing, and restoring animal temperature. In many cases, however, this amendment has been but temporary, and the patients have again sunk and died; and hence the remedy seems to have got out of repute. It appears to us, however, to have been too speedily abandoned. Too much was expected from it. All that it can accomplish is to remedy to a certain extent the condition of the blood, upon which the cessation of the circulation depends, thus restore this function, and relieve the phenomena

immediately resulting from its cessation. But the primary disorder continuing, the blood is soon reduced to its former condition, (probably rendered worse, since no fibrine having been supplied, its proportion is smaller,) and the secondary phenomena reäppear. Whilst then the circulation is restored, the gastro-intestinal irritation must be allayed, the afflux to these organs arrested, and the secretions stopped; and as prolonging life, so as to enable us to employ remedies for this purpose, venous injection, it appears to us, may be resorted to.

It must be confessed however, that when this stage has gone to that period—when the white evacuations are replaced by red and bloody ones—when the pulse has ceased in the radial arteries—the skin icy cold, of a deep blue colour—much is not to be expected from any remedies. It is in vain now, that we resort to depletion. If we open a vein, it furnishes scarcely a few drops of black, viscid blood; and the leeches will not attach themselves, or if they do, they fall off before half filled, and their punctures do not bleed. It is impossible in this condition to induce revulsion; the connexion between the organs is broken up; remedies produce no effect beyond the part to which they are immediately applied, as has been truly observed by M. Bouillaud, "the physician has no longer to contend against disease, but against the grasp of death; and the gift of miracles is unhappily not among the number of our therapeutic means."

Even in this condition, however, venous injection has been tried, and with the effect of reviving the circulation, relieving the disorder caused by its cessation, and apparently prolonging life.

But when nothing remains to be done for the cure of the patient, we should at least endeavour to solace him, and especially avoid distressing him.

"Now," remarks M. Gendrin, "we would injure him, by increasing the oppression and anxiety which overwhelm him, if we heat him and give him hot drinks; we would even rapidly accelerate his death by this treatment, which his universal coldness suggests. His last moments would even be prolonged by introducing fresh air into the chamber, by giving him cold water by spoonfuls, and by allowing him to uncover his chest: these are the only means I have recommended in such cases. In hospitals it would suffice to do nothing but give water to the patients. In this stage they uncover themselves; and appear to breathe easier in a current of air, and in wards not heated; freed from coverings which would impede the painful motions of their chest." p. 192.

M. Bouillaud describes two forms in which reäction may present itself, one a simple excitement of the sanguineous system, followed by more or less abundant perspiration, terminating the disease; in the second, irritation of the brain comes on whilst the gastro-intestinal irritation persists, and the assemblage of typhoid symptoms appear.

The treatment of the first is simple; cooling and demulcent drinks are all that is required from the physician, nature accomplishes the rest. When the reäction is too great, it must be moderated either by general bleeding, or leeches to the abdomen or anus.

The treatment of the typhoid reäction is much more difficult. The best authorities here, concur as to the propriety of antiphlogistics; for even those practitioners who deny the existence of any irritation of the gastric passages during the collapsed stage, confess its existence during the period of reäction. It may be readily conceived, however, remarks M. Bouillaud, that in persons exhausted by profuse evacuations, we cannot bleed as copiously as in those who have suffered from ordinary gastro-intestinal irritation, upon which is engrafted a more or less severe irritation of the brain. In every inflammation it is, moreover, a generally recognised principle, that the treatment ought to be modified according to the general state of the individual.

"It is not uncommon in the typhoid stage," he adds, "for bilious vomitings to replace the discharge of the choleric fluid; and still more frequently for a fatiguing and obstinate hiccup, with frequent eructations, to succeed to the vomiting; in both cases we may be assured that the stomach continues to be the seat of an active and violent irritation. We can hope to conquer this irritation only by the repeated application of leeches to the epigastric region. I have cured by this measure, very recently too, hiccup that had resisted every other mode of treatment. Opiates are here useless; antispasmodics and magnesia equally fail: if they relieve the hiccup for a short time, it does not fail to reäppear, and all we often gain by their use is an increase of the gastric irritation, of which the hiccup is the effect. Ice internally and over the epigastric region has been sometimes employed with success.

"But it is not sufficient to combat the affection of the digestive passages; the cerebral affection, the source of the phenomena termed typhoid, imperiously demand an appropriate treatment. If the patient is strong and vigorous, and the pulse still retains some volume, recourse may be had to general bleeding; but if the contrary be the case, we must abstain from this measure. In every condition, leeches applied to the temples, or behind the ears, and ice to the head, should be resorted to immediately on the development of the first symptoms of cerebral congestion. The extent to which local bleeding is to be carried, and the frequency of its repetition must be determined by the violence of the congestion, and the strength, age, sex, and constitution of the patient.

"As to ice, if we wish to obtain good effects from it, its application must be continued for several hours; and it is often necessary to apply several bladders with ice, successively to the head.

"Revulsives to the lower extremities, (sinapisms and blisters,) are the best auxiliaries to these measures." p. 314, 315.

We may now notice another condition of reäction described by M. Gendrin, as of frequent occurrence. The reäction is here reëstablished with but little fever; yet there is a marked dryness of the

skin, agitation, insomnia, and deficiency of urine—in such cases M. G. says, that a tepid bath is often the best measure for altering this condition, for the relief of which, benefit is almost always derived also from prudent local depletion.

The management of convalescence is not the least difficult part of the treatment of cholera. Relapses cannot be too carefully guarded against, since they are usually fatal. Convalescence is so troublesome, observes M. Gendrin, and the disorders which attend it, though transient, and apparently not severe, are so obstinate, that the physician is obliged to modify, in many ways, the employment of therapeutic means. M. G. continues in general during convalescence the use of Seltzer water, often mixed with milk—he next allows weak broths, at first pure, afterwards with a little rice; then roasted poultry taken in small quantity, and he gradually augments the quantity of food, "as in convalescence from violent gastro-enteritis." When there remains some tension, with heat of the abdomen, dry tongue, anorexia, irregular returns of diarrhœa or nausea, he insists further upon the antiphlogistic treatment; and frequently orders the warm bath. When the patient is troubled with anorexia, borborygmi, and frequent flatulence, and the tongue is pale, large, and pasty, M. G. says that he has had recourse, with advantage, to small doses of the bitter tonics, as the bark, &c.

We have thus cursorily sketched the outlines of what appears to us to be the rational treatment of cholera, and if the views we have sustained of the pathology of this disease be correct, it is that which, with some modifications, no doubt, must be ultimately adopted.

A very useful task remains still to be accomplished, viz. the particular investigation into the value of the various remedies that have been employed in the treatment of the disease under notice. Some of them not yet alluded to, might no doubt be advantageously employed, and it is not less important to possess accurate knowledge of the effects of those remedies which are injurious, for in a science like that of medicine, where we are often driven from our direct course by idiosyncrasies and the peculiarities of constitution of the sick, and where we are as often tempted to depart from it by treacherous symptoms, it is not less necessary to know what is injurious than what is useful. The buoy is as valuable as the guide post. Hereafter, we may undertake this task, but the length to which this article has already extended admonishes us that it is time to conclude. We must not close, however, without offering a few remarks on one or two of the most extensively used and most lauded remedies.

The first of these which we shall notice are *emetics*, whose well-

known effects in determining to the surface, led to their employment in cholera for the purpose of relieving internal congestion, and promoting reäction. That this effect sometimes follows their operation, and that even they aid in its production, testimony of too strong a character might be adduced to admit of doubt. But it appears from equally authoritative evidence that in a large number of cases they fail to excite reäction, and even in those in which it succeeds; in some the reäction is but momentary, and in others it developes accidents scarcely less fatal than those which it was employed to relieve. Thus the sulphate and hydrochlorate of soda, besides their emetic property, possess that of rapidly suppressing the choleric secretion. Now if the suppression of the evacuations were of very great importance and constituted the most direct means of determining reäction, the administration of these salts would be very often succeeded by beneficial results, for they have very frequently the direct effect of promptly suppressing the phlegmorrhagic evacuations. But this suppression "is always accompanied by an active inflammation of the gastro-intestinal villous membrane,"* and we thus have an acute gastro-enteritis substituted for the secretory irritation of cholera. Now the question to be solved is, whether the patient is a gainer by this change in his disease or not. Acute gastro-enteritis is unquestionably a most fatal disease, and no practitioner would think of wantonly entailing it upon his patient. But where the choleric evacuations are excessive, the patient rapidly sinking under the discharge—bleeding, as it were, to death—and where the direct measures for the cure of the disease have failed, it may be expedient to arrest the discharge by the salt emetic, even though at the cost of an acute gastro-enteritis.

The utility of this remedy is sustained by the high authority of our esteemed collaborator and friend, the distinguished Professor of the Institutes and Practice of Medicine in the University of Pennsylvania, who gave it a pretty extensive trial in his hospital, during the prevalence of the cholera in Philadelphia. Professor Chapman's experience, it is just to add, has led him to entertain a higher estimate of its efficacy than we have expressed; but this skilful and judicious practitioner, immediately followed up the use of the emetic, by bleeding, cups to the abdomen, and blisters to the same part, with revulsives to other portions of the body, by which the ill effects of the emetic must have been to a greater or less extent controlled.

Panic-struck at the extreme prostration attendant upon this disease, many practitioners rushed immediately to the use of the most

* Gendrin, p. 240.

powerful stimulants, administered in the largest doses, for the relief of this symptom.

"For every observer," remarks M. Bouillaud, "who like the vulgar, does not look beyond the symptoms of diseases, and who takes, as it were, the shadow for the substance, the sole indication which presents itself to his mind, in the algid or collapsed stage of cholera, is to excite, reänimate, stimulate, strengthen. Absorbed entirely by the exterior phenomena, such a superficial observer cannot conceive, at first, the idea of any other indication, and he especially revolts against the antiphlogistic plan. However, if less exclusively preoccupied with exterior symptoms, he will reflect an instant and investigate the disease more deeply, he will soon perceive that these external symptoms, the vivid picture of debility, coïncide with the phenomena of a vast secretory irritation or phlegmorrhagia of the digestive organs, and that these latter phenomena even preceded the others. This gleam of light will not be lost in the treatment. The indication to restore the great and vital functions of circulation, of respiration and of calorification, doubtless will not appear to him less urgent; but he will demand whether the best means of fulfilling this indication, really consists in the application of excitants, tonics, and stimulants to a surface already too much excited, too much irritated, or whether it would not be better to soothe the irritated membrane, to cool its inflamed surface by the means we have advised, at the same time that we endeavour to revive the exhausted functions, by applying to other parts the stimulants, the positive indication for which has been discovered. Great prostration also exists in that form of gastro-enteritis which has been designated by some by the name of typhoid fever. Is it believed that it would be in accordance with a rational and sound therapeutics to combat this prostration by administering internally, as was too long done, the most powerful tonics and the most heroic stimulants? This man who has scarcely any pulse, whose extremities are already cold, has fallen into this state entirely in consequence of an acute or of a sub-acute inflammation of the peritoneum; would you revive him, warm him, by injecting stimulants and tonics into his peritoneal cavity?

"It is not sufficient then to ascertain the existence of phenomena which indicate excessive prostration; it is necessary to seek the source of this prostration, without which we run the terrible risk of aggravating the evil in endeavouring to relieve it. I declare, with the most perfect conviction, and with that good faith without which no one is ever worthy the name of physician, that whoever in the present state of our knowledge respecting the nature of cholera morbus, would propose as the principal basis of the treatment of this formidable disease, internal stimulants and tonics, would commit, to use an expression of Bichat's, the most fatal therapeutic absurdity. That this method was employed in the commencement of the epidemic, that is at a period when we were for the most part, I am bold enough to say it, in the grossest ignorance of the true nature of cholera morbus, may be conceived, excused, even approved to a certain point. That this method may have been so lauded as to have been tried by physicians who now yield to it but very moderate confidence, does not astonish me, for I myself once employed it. But its use should be forever abandoned. Experience and reason, in accordance here with the instinct of patients, equally

prove this. If it is not immediately followed by very serious accidents it incontestably disposes to typhoid phenomena, which so rarely spare those who have escaped the collapsed stage." pp. 298-300.

The extreme coldness of the body in the algid stage of cholera, seems to have led some physicians to think that the most important indication in the treatment was to warm the patient, and the mere enumeration of the various methods devised for this purpose, would occupy several pages. At present it is known that the application of external warmth effects little towards the cure. To heat a cadaverised choleric patient, is not to revive him, as is just remarked by M. Bouillaud. We revive him only in proportion as we place him in a condition to warm himself, that is, by reviving the circulation and relieving the fundamental lesion upon which the algid condition depends. The patient is not in a dangerous state, threatening immediate death, because he is cold—on the contrary, his coldness results from this dangerous state. Nearly all the recent writers appear to accord, indeed, as to the inutility and even injurious effects of resorting to measures for heating the body. "Heat and dry vapour," says M. Gendrin, "are of all the measures employed against cholera, the most dangerous, and those which have done most harm." The testimony of Professor Chapman is to the same purpose. The suffering induced by them is equal, he says, to that he has ever witnessed from the application of any remedial process.

It appears to us, that they can be only useful as revulsives, and that they cannot act as such, except in the early stages, or in the mild cases of the disease. Cold water douches and frictions with ice, appear to have been productive of more benefit than warm applications.

The saline treatment, as recommended by Dr. Stevens, has attracted no little notice, but the statements of its effects are so utterly contradictory, involving even the veracity of the relators, that it is impossible to judge what value experience will ultimately affix to it. This treatment is, however, based upon false principles, viz. that the essence of the disease consists in the deficiency of saline matters in the blood—a condition which is but a secondary effect, and one of minor importance. In the premonitory stage, this deficiency, as is shown by the analysis of Dr. O'Shaugnessy, does not exist; the employment of the remedy then, for the fulfilment of that supposed indication is useless. Whether it possesses any prophylactic power; how far it is useful in the later stages by supplying proper materials for absorption, and to what extent its utility in this respect is counteracted by its tendency to occasion ordinary gastro-enteritis, are points we are not at present prepared to discuss.

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XVIII. *Memoire sur l'Empoisonnement par des Mélanges de Substances Veneneuses* Par M. Orfila.

Memoir on Poisoning produced by Mixtures of Deleterious Substances. By M. Orfila. Paris, 1832.

Difficult as the detection and verification of poisons, even when in a simple and uncombined state, confessedly is, the task becomes a hundred-fold more intricate when two or more of these substances have been ingested either in union, or in close succession. The symptoms and lesions produced by the action of many of these mixtures have it is true been described in most works on Medical Jurisprudence, but no rules had been laid down for the verification of them, until the appearance of this memoir of the great toxicologist. In the course of experiments he undertook for this purpose, many remarkable and unexpected phenomena presented themselves. Sometimes articles which it was supposed were not susceptible of decomposition, reäcted on each other, so strongly, as to form new compounds, unrecognisable by the usual tests for the original substances. So complete indeed, is the change, that it would oftentimes be extremely difficult, if not impossible, to ascertain what poisons had been administered in a combined form, by the mere aid of chemical investigation, the medical jurist must here rely in great measure on other evidence, as the discovery of certain articles in the possession of the accused, or of his having recently purchased them.

It is impossible to give more than the general results of the numerous experiments of M. Orfila in the present notice, and we must therefore refer such of our readers as wish to pursue the subject in all its bearings, to the original memoir.

Mixture of corrosive sublimate and arsenious acid.—This may be detected by treating the mixture with cold sulphuric ether, and repeatedly shaking the mixture, the sublimate will be dissolved, and may be obtained by evaporation. Even if the two poisons were dissolved in water, the ether will separate the mercurial salt.

Corrosive sublimate and acetate of copper.—This is to be treated as in the last case, the acetate of copper not being soluble in ether.

Corrosive sublimate and acetate of lead.—Here also the ether is to be made use of.

Corrosive sublimate and tartar emetic.—The same process as above.

Corrosive sublimate and nitrate of silver.—Solutions of these salts mutually decompose each other forming an insoluble chloride of silver and a soluble deutonitrate of mercury.

Corrosive sublimate and nitrate of bismuth.—The sublimate can be separated by means of ether.

Mixture of equal parts of corrosive sublimate with different acids, where the acid is either the nitric, sulphuric, or phosphoric.—The free acid is to be saturated with potash, taking care not to use any excess of it, evaporate to dryness, and heat, the corrosive sublimate will sublime, leaving a sulphate, nitrate, or phosphate of potash, in which the presence and proportion of the acid can readily be determined.

Oxalic acid.—Saturate with potash, treat with alcohol which will dissolve the mercurial salt and leave the oxalate, which is to be decomposed with acetate of lead, forming an insoluble oxalate of lead, from which the oxalic acid can easily be separated.

Proto-nitrate of mercury and verdigris.—When strong solutions of these salts are mixed together, a white precipitate of proto-acetate of mercury takes place, leaving a deuto-nitrate of copper in solution.

Proto-nitrate of mercury and arsenious acid.—When solutions of these substances are mixed together, a white precipitate is formed, which is insoluble in arsenious acid, but soluble in nitric acid.

Proto-nitrate of mercury and acetate of lead.—This mixture may be ascertained by diluting it with water, and adding hydro-chloric acid, which will precipitate the mercury in the state of a proto-chloride, and will form with the lead a proto-chloride soluble in the water of the mixture.

Proto-nitrate of mercury and tartar emetic.—In solution they mutually decompose each other, forming a white precipitate of proto-tartrate of mercury.

Deuto-nitrate of mercury and arsenious acid.—Arsenious acid forms a white precipitate with the deuto-nitrate of mercury, except there be a great excess of the acid, in which case the mixture remains transparent, giving a yellow precipitate with potash, a carmine one with hydriodate of potash, and a yellowish-green one with ammoniacal sulphate of copper.

Deuto-nitrate of mercury and acetate of copper.—On solutions of these two salts being mixed together, a slight turbidness is produced, and in a few hours, a precipitate of a dirty colour is formed; this is the deuto-acetate of mercury, whilst the fluid contains deuto-nitrate of copper, and some deuto-acetate of mercury, which has not precipitated.

Deuto-nitrate of mercury and tartar emetic.—These two salts mutually decompose each other, giving rise to an abundant white precipitate.

Arsenious acid and acetate of lead.—There is an extraordinary phenomenon produced by adding nitrate of silver to a solution of three parts of the saturnine salt, and one of the arsenious acid; it produces a yellowish precipitate, mixed with *white* crystalline acetate of silver and yellow arsenite of the same metal. Now, it is well known, that arsenious acid causes a white precipitate with nitrate of silver. M. Orfila is of opinion, that in the present case, the arsenious acid attacks the oxide of lead in displacing the acetic acid, and this arsenite of lead acts by double decomposition on the nitrate of silver.

Arsenious acid and tartar emetic.—Analysis. Boil the mixture with carbonate of potash and soluble arsenite and tartrate of potash and oxide of antimony will be obtained; the latter is soluble in hydro-chloric acid, affording hydro-chlorate

of antimony. The fluid is to be treated with hydro-sulphuric acid and a few drops of hydro-chloric acid, giving a precipitate of the yellow sulphuret of arsenic; the filtered fluid treated with lime will afford tartrate of lime.

Arsenious acid and acetate of copper.—To analyze this mixture, M. Orfila recommends it to be boiled with distilled water; the result will be soluble arsenite and acetate of potash, and insoluble deutoxide of copper, which latter may be readily recognised by dissolving it in nitric acid. The fluid is to be distilled in a close vessel, with a small quantity of sulphuric acid; there will be a disengagement of acetic acid, recognisable by its smell; when about one-third of the fluid is left, the process is to be stopped; this fluid is to be diluted with water, and treated with hydro-sulphuric acid, when a precipitate of the yellow sulphuret of arsenic will be produced.

Arsenious acid and nitrate of silver.—This may be analyzed by carbonate of potash, which will form with the arsenious and nitric acid, a soluble arsenite and nitrate; and with the oxide of silver a carbonate of silver, decomposable by heat, so as to leave the silver in a metallic state.

Arsenious acid and nitrate of bismuth.—This mixture may be analyzed like the preceding.

Arsenious acid and alum.—To analyze this mixture, it is to be dissolved in boiling distilled water, then an excess of hydro-sulphuric acid added, which will precipitate all the arsenious acid in the form of a yellow sulphuret; the filtered fluid will contain the undecomposed alum.

Arsenious acid with other acids.—Sulphuric. Can be separated by distillation; the sulphuric will pass over, carrying with it a small proportion of the arsenic, but the greater part of this latter will be left in the retort. *Nitric or Hydrochloric.* Also can be separated by distillation. *Phosphoric.* Hydro-sulphuric acid causes a yellow precipitate; nitrate of silver a white. The two acids can be separated by distillation. *Oxalic.* To separate these two acids, the mixture is to be evaporated to dryness, and treated with alcohol, which will dissolve the oxalic acid alone.

Acetate of copper and acetate of lead.—The mixture is to be treated by a solution of subcarbonate of potash, which will give rise to a soluble acetate of potash, and a mixture of deutoxide of copper and protoxide of lead; these two oxides may be dissolved in nitric acid, and the obtained nitrates decomposed by sulphuric acid, which, if not in excess, will give a soluble sulphate of copper, and an insoluble sulphate of lead. The fluid which contains the acetate of potash is to be treated by sulphuric acid to obtain the acetic.

Acetate of copper and tartar emetic.—Solutions of these salts decompose each other, and furnish a precipitate of greenish-blue of tartrate of copper.

Acetate of copper and nitrate of silver.—To analyze this, precipitate the silver in the form of a chloride by means of hydro-chloric acid, and evaporate the fluid to obtain the cupreous salt.

Acetate of copper and nitrate of bismuth.—This mixture may be detected by an excess of ammonia which will form a soluble ammoniaco-acetate of copper, and leave the oxide of bismuth undissolved.

Acetate of copper and phosphoric acid.—Phosphoric acid precipitates this acetate of a bright blue colour, and if in excess will redissolve the precipitate.

Acetate of copper and oxalic acid.—Oxalic acid precipitates the oxide of copper of a blue colour, except the solutions be much diluted. Hydro-sulphuric acid precipitates this mixture of a black colour.

Acetate of lead and tartar emetic.—These solutions mutually decompose each other, giving rise to an insoluble tartrate of lead and acetate of potash.

Acetate of lead and nitrate of silver.—To be detected by diluting with water, and adding hydro-chloric acid which will precipitate the silver in the state of a chloride, leaving the chloride of lead in solution.

Acetate of lead and nitrate of bismuth.—May be analyzed by diluting the mixture with water, acidulating with nitric acid and adding sulphuric acid which will precipitate the lead in the state of a sulphate, leaving a sulphate of bismuth in solution.

Tartar emetic and nitrate of silver.—This mixture can be verified by means of carbonate of potash which will precipitate the two oxides. Boiling nitric acid will dissolve that of the silver and leave the peroxide of antimony.

Tartar emetic and nitrate of bismuth.—A mixture of these solutions forms an abundant precipitate.

Tartar emetic and various acids.—Sulphuric, nitric, hydro-chloric and phosphoric acids precipitate a solution of tartar emetic of a white colour. Oxalic acid has no effect on it.

Nitrate of silver and nitrate of bismuth.—By adding hydro-chloric acid to a mixture of these solutions, the silver will be precipitated in the form of a chloride, whilst the salt of bismuth will remain in solution.

Nitrate of silver and various acids.—Sulphuric acid gives a precipitate which is soluble in water. Nitric affords an acid nitrate. Hydro-chloric throws down chloride of silver, and oxalic a white oxalate. Phosphoric gives a mixture which is precipitated of a black colour with hydro-sulphuric acid, &c.

Laudanum and arsenious acid.—Laudanum will dissolve but a small quantity of arsenious acid, and hence the greater portion can be obtained by filtration. That in solution can be detected by hydro-sulphuric acid.

Laudanum and corrosive sublimate.—Forms a precipitate. The presence of the mercurial salt can be demonstrated by adding sulphuric ether which will dissolve it—and it can be obtained by evaporation.

Laudanum and acetate of copper.—Exhales a smell of laudanum. The copper can be detected by means of a rod of bright iron. Where there is a great excess of laudanum, a brownish-yellow precipitate will be formed.

Laudanum and tartar emetic.—Resembles laudanum in smell and colour. The antimony can be demonstrated by precipitating it by means of hydro-sulphuric acid.

Laudanum and nitrate of silver.—Preserves the appearance, smell and taste of laudanum. Forms a black precipitate with hydro-sulphuric acid, and a dark olive one with potash. A rod of bright copper will revive the silver.

Laudanum and acetate of lead or nitrate of bismuth.—These salts form an abundant precipitate with laudanum.

In the above experiments, M. Orfila has merely observed the effects of mixtures without the addition of any other substance, and he justly remarks, if even in this case there is much embarrassment and difficulty, how much more are these increased when these mixtures are united with the contents of the stomach,

&c. In such a state of things, he orders the suspected fluids to be evaporated to dryness by a gentle heat, the product treated with boiling distilled water, to get rid of a portion of the animal matter, then filtered, decolorized by means of animal charcoal, and then the tests applied as above.

It should also be observed, that all the above experiments are solely intended to demonstrate the nature of the poisons, and not to determine the exact proportions of each; where this is wished, other and more complicated processes must be resorted to.

The whole memoir is an additional proof of the discriminating judgment of the author in this department of science, and will amply repay an attentive perusal. R. E. G.

XIX. *Principles of Physiological Medicine, in the form of Propositions; embracing Physiology, Pathology, and Therapeutics, with Commentaries on those relating to Pathology.* By J. F. V. Broussais, M. D. &c. Translated from the French by Isaac Hays, M. D. and R. Eglesfeld Griffith, M. D. &c. 8vo. pp. 594. Philadelphia, Carey & Lea.

The present work is unquestionably a very important and necessary companion to the Treatise on Physiology as applied to Pathology, by the same author. The two works present a very fair exposition of the principal features of the physiological doctrine of medicine as taught by its celebrated founder. From no other source can a complete acquaintance with it be obtained—at least with so little trouble and in so satisfactory a manner. Into the actual value of that doctrine, when tested by a course of clinical investigations, and its agreement or disagreement with the results of actual experience, it is unnecessary at present to examine. As a mere object of curiosity, in consequence of the long and bitter controversy to which it has given rise, there is no member of the medical profession but must desire to make himself conversant with its peculiarities, and the facts and arguments by which it is attempted to be supported; and when he reflects that its announcement formed a new era in the history of our science, and that through its influence important changes have been effected in the medical opinions, modes of reasoning, and practice held and pursued by the physicians of almost every school and country, he will be led as a matter of duty to its attentive study, in order that he may keep pace with the actual advances of his profession. From whichever of these causes an interest may be excited in the doctrines advocated by M. Broussais, the present work will form an indispensable addition to the library of every physician.

It presents in a corrected form his celebrated propositions first published in 1821, with very full commentaries on such of them as relate especially to pathology. In these commentaries, the peculiar views of the author in reference to the nature and character of the several morbid conditions of the human frame are minutely detailed and illustrated by various facts and arguments.

The author assures us that in these commentaries he has faithfully related what he has seen concerning pathological phenomena, what he has done to remedy them, and what he has observed in the bodies of those who have died. "Nothing is easier than at the present time, to verify these facts, and to see

whether the inductions which will be drawn from them, for man always forms some conclusions from what he has seen, are conformable to those of the author himself." In this manner the correctness of the doctrines of physiological medicine can be readily tested by comparing the deductions upon which it rests with the facts which every day present themselves to the notice of the industrious and observing practitioner, even though the sphere of his observations be far more limited than that afforded by the wards of an extensive hospital.

In the preparation of his commentaries, M. Broussais states that he has for four years constantly laboured with his whole soul, in all the frankness and good faith of which he was capable, making it a duty to include in them the result of his experience and of his meditations.

The work under notice proves M. Broussais not to be so obstinately opposed, as has frequently been asserted, to the slightest modifications of the opinions originally announced by him, even when these opinions have been clearly proved to be incorrect; on the contrary, it will be found that he seizes with avidity, upon every fact which the investigations of his contemporaries have succeeded in bringing to light, and whenever these militate against the conclusions to which he had previously arrived, he cheerfully admits and corrects his error. The attentive reader will find, in perusing the present work, that in various particulars his doctrines have been modified in accordance with truths subsequently established. The main features nevertheless remain unchanged.

Of the manner in which the translation is executed it will be improper to say any thing in this place. If they who are conversant with the French, detect a few slight inaccuracies, they must confess at the same time that these could scarcely be avoided, in the translation of a work of the peculiar character of the present. In many instances the sense of the original could be rendered in the English only by an awkward periphrasis; in attempting to avoid which, by a more concise and literal rendering, the sense of the author is occasionally somewhat obscured; but as a whole, the fact of its clearness and fidelity will be universally conceded. D. F. C.

XX. *Manual of General, Descriptive and Pathological Anatomy.* By J. F. Meckel, Professor of Anatomy at Halle, being an English translation from the French. With Notes. By A. Sidney Doane, M. D. of New York. 3 vols. octavo. pp. 500. Philadelphia. Published by Carey & Lea, 1832.

The very general celebrity of this work of Professor Meckel, and its acknowledged merit, have made an English version of it, an acquisition of no small importance to the profession of medicine. An intimate acquaintance with it from repeated reference and consultation, has placed it in the opinion of the writer of this article, among the most classical, learned, and authoritative treatises on anatomy, under the very modest cognomen of a manual; it is in fact a system quite as full as can be well desired, either for the student of medicine, or for the practitioner. So far from the professor having the appearance of being cramped for the want of space, the most of his observations, except those on pathology and physiology, are made with a diffusiveness certainly equal to any disposition for study found commonly among medical men.

While we admit that he might have proceeded deeper into a sort of interminable description, we doubt whether he would have improved by it either the lucidness or the estimation of his work. He has, we think, preserved a very fair proportion between the value of his ideas, and the quantity of language into which he has thrown them; a merit of no small importance, considering the brevity of human life, and the necessity of our working up its scraps of time to the best advantage.

We think it one of the most remarkable faults of modern medical literature, and especially that of our British brethren, on almost all the subjects discussed by them, that they seem to dread and to put off the development of the idea which they wish to inculcate, so that it requires no small patience and good nature to hunt out what they mean. We have often thought that it would be an excellent plan for those diffuse writers, to give for the benefit of impatient readers an algebraical statement of what they intend, and to leave for the patient ones the body of their productions, with all its circumlocutions and superfluities. There are many men whose reputation would be much benefited by presenting their ideas prominently and disencumbered. We have thus disposed of Mr. Meckel's apologetic name for what we consider a sufficiently complete system of anatomy.

Dr. Doane has performed his duty of translator in a manner extremely creditable to him, and, so far as we can judge, with general accuracy. He certainly deserves praise for his constancy in getting through an English version of more than fifteen hundred closely printed pages, and we hope that he will be well rewarded in reputation and advantage for this effort to place before the American student a work of such decided value. By persons conversant with German, the French translation has long ago been declared as defective in representing the ideas of Mr. Meckel on several points, and sometimes in making him say contradictory things. This of course would be a radical objection to an English version, taken from the French as the present is, without some guard against these errors, but from the preface of the translator it gives us pleasure to perceive that Dr. Doane has had the assistance of Dr. Alfred C. Post, whom he represents as a good German scholar, in detecting and correcting these errors. It perhaps would have been more satisfactory if he had given us a distinct pledge that they were all corrected or omitted. W. E. H.

XXI. *Elements of Practical Pharmacy.* By Robert John Kane, Professor of Chemistry to Apothecaries' Hall, Dublin, &c. Dublin, 1831. pp. 349. 12mo.

This work is intended for the student of pharmacy, and is certainly well adapted as a text book of the principles upon which the more important pharmaceutic operations are founded. The author has not attempted to explain all or even the greater proportion of the minor processes pursued in the manipulation of medicines, but has confined himself to an elucidation of a number of circumstances, with which a student of pharmacy is expected to be thoroughly acquainted, and yet which are not sufficiently detailed in any work in the English language. In fact, whilst on the continent of Europe, and more especially in France, numbers of excellent works have appeared on the elements of pharmacy, we are miserably deficient both in Great Britain and the United States,

in these important aids to the student. It is true we are in possession of several excellent commentaries on the different pharmacopœias, but these are only calculated for, and useful to the experienced pharmaceutist and not to the mere tyro.

In a short introduction, Mr. Kane gives some useful rules for the collection and preservation of various articles of the materia medica, with tables of the time of the year for the collection of each; the loss in drying, &c.; the author has here, as indeed is the case throughout his work, drawn largely on the stock of valuable information laid before the world by the members of the Societé de Pharmacie de Paris.

Part one is devoted to the consideration of the mechanical operations required in the determination or preparation of various drugs; one of the most frequently used of these is that of weighing, and there is no one in which a greater degree of accuracy is requisite, for an error even to an apparently trivial amount, may occasion consequences detrimental not only to the character of the operator, but also to the proper medicinal effects of the substances prepared by him. This part of Mr. Kane's treatise is excellent, being even more practically useful than that on the same subject in Faraday's valuable precepts, and is illustrated by a greater number of comparative tables of weights, &c. than are usually to be met with in works of this character. That however of drops and minims is inferior to that of Mr. Durand, in the American edition of the Manual of Materia Medica.

The second chapter is on the operations by which bodies are mechanically divided. These are of various kinds, but do not require any particular notice in this place; the results of all these processes, however, require other operations, which are next treated of by the author—those by which bodies are mechanically separated; these processes are various, and include the modes of separating solids from solids, solids from fluids, and fluids from each other. The next chapter takes up a diametrically opposite class of operations, or those by which bodies are mechanically mixed, which concludes this division of the work.

The second part is devoted to chemical processes, and opens with an introductory chapter on heat, as an agent in pharmaceutic operations, including the modes of estimating its degree as well as the modes of applying and regulating it; Mr. Kane's observations and directions on this subject are judicious and practical, but contain nothing that is peculiar or deserving of particular notice.

The second part itself is replete with instruction and will richly repay an attentive study; parts of it, however, we think is better calculated for the experienced pharmaceutist than for the beginner in the science, more especially those sections of it which refer to particular preparations. Taken as a whole, however, the work is admirably suited to supply the blank spoken of at the commencement of this notice, and entitles Mr. Kane to much praise for the clearness and judgment of his practical precepts, which he has very properly given without any admixture of theory or speculation. Much as has been done there is nevertheless still an opening for a work on the plan of Faraday's Chemical manipulations, giving those minutiæ of various pharmaceutic operations on which the beauty and even the efficacy of so many preparations are mainly dependent.

R. E. G.

XXII. *Lehrbuch der Operativen Chirurgie.* Von Dr. Ernest Leop. Grossheim, Königl. Preuss. Stabsarzt, Inhaber des Konigl. Preuss. Allgemeinen Ehrenzeichens 1ster Klasse, Ritter des Kaiserl. Russ. St. Wladimir Ordens 4ter Klasse, Mitglied der Med. Chir. Gesellschaft zu Berlin und der Med. Chir. Akademik zu St. Petersburg. Erster Theil. pp. 559. Berlin, 1830. Zweiter Theil. pp. 697. Berlin, 1831.

A Compendium of Operative Surgery. By Dr. Ernest Leopold Grossheim, Physician of the Royal Prussian Staff, Member of the Medico-Chirurgical Society of Berlin, of the Medico-Chirurgical Academy of St. Petersburg, &c. &c. 2 vols. Berlin, 1830, 1831.

Amongst the various works, which have recently appeared on the subject of operative surgery, none have afforded us more satisfaction, than that which we have announced above. It is precisely such a manual as we should be pleased to see placed in the hands of every student of surgery, for whose use it is admirably adapted. Nor would it prove less useful to the practitioner, who would find in its pages all the most approved operative procedures of his art, delineated in a clear, comprehensive, and concise style, and arranged in a perspicuous and natural order. It is not extended by any thing superfluous, or mystified by vague and useless speculations. It may, indeed, be said to contain the very quintessence of the science, divested of all extraneous materials.

Under each head the author gives a brief exposition of the objects of the operation, and a succinct account of its history, in which are traced the various procedures which have been employed up to the present time. He then lays down the circumstances which call for its employment; those by which it is contraïndicated; the instruments and apparatus necessary in its execution; the disposal of the patient and assistants; the different acts or steps of the operation itself; the particular variations of them which will be necessary to suit special conditions or emergencies; the application of the dressings, together with the after-treatment of the patient. Nor does he confine himself to the exposition of a single method of operating, in any particular case in which more than one may be adopted. He lays down the order of procedure to be adopted in each, with the same detail; discusses their several advantages and disadvantages, and thus leaves it to the option of the surgeon, to adopt that which he may consider best adapted to any particular case.

The work is divided into two parts; the first of which treats of those operations which may be practised upon any part of the body, while the second embraces the consideration of such as are only performed upon particular regions; as the head and neck, the trunk, and the upper and lower extremities. This order is sufficiently natural, and is, we think, much better than the method sometimes adopted of grouping together the different operations according to their affinities, without any reference to the parts upon which they are to be performed.

We cannot conclude without expressing our regret that so little attention is paid in this country to the rich fountains of German medical literature, and, that while we are translating so freely from the French, so many invaluable productions which are constantly issuing from the German press, are suffered

to remain as a sealed volume to the members of the profession in America. We have already recommended a translation of the excellent manual of Chelius, as one of the best handbooks for students, on the principles of surgery, with which we are acquainted. We will now take the liberty of recommending the adoption of the same course with regard to the work of Dr. Grossheim, which we consider one of the best manuals of operative surgery that could be put into the hands of our students. E. G.

XXIII. *Handbuch der Chirurgie zum Gebrauche öffentlicher vorlesungen.* Von Joseph Edlen v. Wattmann, ordentlichem öffentlichem Professor der Praktischen Chirurgie, Direktor des k. k. Operateur-Institutes, Mitglied der Königlich medizinisch-chirurgischen Akadamie zu Neapel. 1 Theiles 1 Band. Allgemeine Krankheitslehre in Beziehung auf örtliche Gebrechen. II. Theile I. Band. Allgemiene Heilungslehre in Beziehung auf ortliche Gebrechen. pp. 281 und 244. Wien, 1829.

A Manual of Surgery, for the use of Public Lectures. By Joseph Edlin v. Wattmann, Professor of Practical Surgery, &c. &c. Vienna, 1829.

This work, as will be seen by the title, is divided into two parts; the first of which is devoted to the general pathology of such local diseases as affect the whole system; the second to the general therapeutic management of the same affections. The author announces it as his intention to treat, in subsequent volumes, of the special pathology and therapeutics of the remaining surgical diseases. The first part of the portion of the work commences with some preliminary observations, in which the author indulges in some speculations upon the proper merits of theory and experience, with which we are not much concerned. He seems to adopt the old maxim that—nihil est in intellectu, quod non prius fuerat in sensu. He next furnishes us with a general definition of disease, after which he enters more directly upon the proper discussion of the subject. The order in which this discussion is conducted may be conceived from the following exposition.

"As in all diseases, the organism may be considered as in part active, and in part passive, their general pathology may be reduced to two heads. The first division will include the mere disturbance of the organism, which may be considered under three divisions. The first will relate to the causes of disease, *(Aetiology;)* the second to their nature or essence, *(Pathogeny;)* the third their form or external manifestations, *(Symtomatology.)* The second division will include the phenomena of the reäction of the organism, and may likewise be divided into three parts:—1. The phenomena of slight, or ordinary reäction, *(the cause and termination of disease.)* 2. Extraordinary local reäction, *(Inflammation;)* and 3. The same extraordinary reäction, affecting the entire organism, *(Fever.")* p. 22.

Each of these subjects is discussed in detail; the various circumstances and contingencies involved are carefully examined, and ably illustrated, and the whole of this portion of our author's labours, taken collectively, may be considered as furnishing a very good exposition of the general pathology of the diseases of which he professes to treat.

The second part of the work opens with some general definitions of the therapeutic art, and a brief history of its development, as connected with surgery.

To this is appended a very good chirurgical bibliography. The author next enters more particularly upon the doctrines of general therapeutics, which are discussed under various heads. The restoration to health or the cure of disease he considers as a natural act of the organism, brought about by its own inherent powers, influenced by its internal acts, modified by the reciprocal agencies of its several parts, and the exercise of external impressions upon it. He discusses, in order, the circumstances which modify or determine the sanability or insanability of diseases; the influence of external agents; as the situation or condition of the part; activity and repose; the exercise of the function of a particular organ; sleeping and waking; the air and the part it bears as a medium through which are conveyed the impressions of other agents; aliment; clothing; the various remedial agents, as well those that act upon the mind, as those which exercise their influence upon the body, &c. &c. It will thus be seen that he has embraced a wide range, and has omitted but few topics which could possess an important bearing in the treatment of diseases. He goes to work like one who is acquainted with the powers of the organism, and what it is capable of accomplishing. He presents himself before us as a philosophical surgeon, and not a mere dealer in recipes and specifics. One who looks to nature for the cure of disease; who is prepared to stand by to assist her in the struggle, although he knows, that without the coöperation of her powers, all his best disciplined efforts will be vain and nugatory. We have, on the whole, been much pleased with Professor Wattmann's work. It contains much useful matter; abounds with many judicious reflexions, and, we doubt not, will be found highly useful to those who attend his lectures, as well as to all who will take the trouble to read it. E. G.

XXIV. *Theorie der Praktischen Heilkunde, ein Pathologischer Versuch.* Von Dr. Moritz Ernst Adolph Naumann, Professor der Heilkunde an der Universität Berlin, &c. &c. pp. 279. Berlin, 1827.

Theory of Practical Medicine. By Dr. Ernst Adolph Moritz Naumann. Professor of Medicine, &c.

This is a valuable little work, and contains much important information, on the subjects of which it treats, in a small compass. Professor Naumann commences with a brief exposition of the general properties of the organization, and of the phenomena of life. These are preliminary to the discussion of the several topics which he has to pass in review. He then considers the general characters of diseases, which he divides into those of simple congestion, inflammation, spasm, paralysis, and finally, fever. From these considerations he passes to the examination of the various modifications to which these diseases are submitted in the several tissues, and in the blood, and the disturbance of function to which they give rise. The course, duration, and termination of disease, are next examined, from whence he proceeds to discuss the subjects of diagnosis and prognosis, and finally concludes with an exposition of the general principles of therapeutics. Upon all those topics the author has spoken with much good sense, and we may observe, that his work, although one of moderate pretensions, is a creditable performance. E. G.

XXV. *A Treatise on Obstructed and Inflamed Hernia, and on Mechanical Obstructions of the Bowels internally; and also an Appendix, containing a Brief Statement of the Cause of Difference in Size in the Male and Female bladder.* By Henry Stephens, Member of the Royal College of Surgeons. London, 1829. pp. 191.

Mr. Stephens writes like a plain man, who has been forcibly impressed with facts which have occurred to him in practice, with inferences which he has drawn from these, and with other analogous cases encountered in the course of his reading; and who has consequently been induced to make the results public for the benefit of his contemporaries. These are among the most valuable class of medical communications; and though we might be disposed to find fault with the simplicity and occasional inaccuracies of his style; yet from the very simplicity of his manner, we draw a conviction of a serious good faith and a love of truth, which are truly invaluable, and we feel certainly strongly inclined to receive his statements of facts with favour and confidence, and his reasonings with respect. Similar to this appears to be the opinion generally entertained in his own country, as far as we can judge from a series of extracts inserted in the volume, and taken from a letter of Sir Astley Cooper, and from different periodicals. From his dedication and preface, and the tone of his work, we should take him to be a young surgeon of much originality of thinking, and who yet entertained a great respect for the high authorities of art, who had enjoyed opportunities for observing and leisure for reflection, and was strongly persuaded of the real value of the opinions he inculcates.

The leading object of his essay is to point out the frequent occurrence of death in hernia, from other causes than strangulation. These may coëxist and coöperate with strangulation in producing that effect; or they may be of themselves sufficient. The second of them in Mr. Stephens' distribution of his book, but which we shall put first, is inflammation of the hernial sac and its contents. This he conceives to arise in frequent and daily instances, without compression by any stricture, and from all the diversity of causes which may be supposed to act upon parts so situated. Besides these cases, however, he apprehends that death may occur without either constriction or inflammation, and by the simple obstruction of the passage of the intestinal contents. This, together with inflammation, is familiar to the readers of our most common authorities, as a consequence of internal strangulation, volvulus and intussusception; but Mr. S. apprehends that surgeons have overlooked the daily production of similar results from the *adhesions* so commonly found both within hernial sacs and in the cavity of the abdomen. The study of these gives rise to some curious and interesting researches in relation to their symptoms and treatment, and the possibility of their occasional cure by operation.

We have placed inflamed hernia first, for the convenience of comparing it the more readily with the idea, more familiar to all our minds, of strangulated cases. Obstructed hernia, if our author be right, differs more widely in its analogies. Mr. Stephens proceeds from the simpler to the more compound case; a method which, however philosophical, does not answer our present purpose. We are attempting to engraft his observations upon the tree of knowledge al-

ready in our possession, and shall begin with the more analogical, proceeding afterwards to the remoter.

No elaborate view of the causes of inflamed hernia is given by Mr. S. We shall perhaps better introduce his ideas by the following extract.

"The contents of a rupture are said sometimes to become inflamed in connexion with an inflammation of the bowels generally, and totally independent of any cause arising from the rupture. That this may sometimes be the case is probable, but I believe such instances are extremely rare. These inflammations, I believe, are almost always generated by the morbid condition of the parts within the rupture, and afterwards become quickly communicated to the interior of the abdomen. Large irreducible herniæ, more especially umbilical, are those in which this form of disease mostly occurs; which appears to partake more of the character of enteritis than of ileus. A small portion of confined intestine, however intensely inflamed in itself, does not so necessarily or so quickly communicate its disease throughout the abdomen, it being of comparatively local origin; but when the contents of a large hernia become inflamed, as a sequel, (I believe,) of various chronic confinements and changes of structure in the parts, the disease, from the first, will be of a more diffused and general character, and will more extensively and quickly communicate with the interior."

The local causes, pointed out by Mr. S. are the unnatural situation of the organs prolapsed, the collection of digested matters above the obstruction, and a previous diseased state. To prove the latter, he appeals to the experience of surgeons, in which it is so often found that the protruded intestines and particularly the omentum are in a morbid condition. Several cases are given, extracted from authors, with one of his own; and then succeeds the following diagnosis and comparison.

"Inflammation of the contents of a rupture may be distinguished from a strangulation of such parts by the more gradual approach of the symptoms, and by their less degree of violence. From obstructed hernia from adhesion, it is to be distinguished by the pain and tenderness of the parts generally preceding the obstruction, and by there being more decided marks of an inflammation existing. Pain, with inflammation throughout the abdomen, is generally soon manifested in inflamed hernia, whereas, in obstructed hernia, it is a late symptom, and in general scarcely prevails at all. Obstructed hernia *may* possibly be followed quickly by inflammation; and then it would become altogether as a case of inflamed hernia, and require an earlier operation.

"In inflamed hernia, the viscera of the abdomen are very extensively inflamed throughout. In obstructed hernia, very slight traces of inflammation are in general visible after death. Cases of strangulation are of an intermediate kind; the inflammation being almost wholly confined to the seat of stricture, and the parts above it; the intestines below being in a state of collapse and uninflamed."

The author then proceeds to point out the possibility of an inflamed hernial sac proving the source of a mortal inflammation of the bowels and peritoneum. In these cases lymph and pus are contained in the sac; and it is recommended to discharge the fluids by a puncture.

Obstructed hernia is illustrated by several cases, some of his own, and some obtained by reading. In the first, reported by himself, and which originally attracted his attention to the subject, there were extreme weakness, loss of voice, stercoraceous vomiting, faintings and hiccup. These alarming symptoms were the gradual growth of nine days, and were produced by an umbilical hernia.

"Reflecting," says Mr. S. "upon the history of this case, I concluded that

the symptoms, although not those of strangulated hernia, were yet such as would be produced by any permanent and mechanical obstruction in the bowels, I therefore considered that it was not only possible but highly probable that the obstruction was in that portion of the bowel which was contained in the hernial tumour. I therefore determined instantly to cut into the hernial swelling, and examine the condition of the parts, and thus see if relief was possible."

The sac was freely opened; and a portion of intestine was found reducible, and another irreducible, in consequence of an adhesion in a position which "at once," says our author, "accounted for the symptoms."

"It was so closely united by adhesions to the hernial sac as to obstruct, to all appearance, its peristaltic action, and prevent the due course of its contents. There was no stricture; for I passed my finger very easily into the abdomen by the side of the intestine, which was somewhat discoloured. I relieved the bowel from its adhesions to the hernial sac, partly by the knife and partly by the finger, with the assistance of my friends; and pushed the intestine into the abdomen, passing my finger in and around the opening on the inside, to be satisfied that there was no further adhesion. I then sewed up the wound."—Soon after "her countenance wore a less anxious appearance, but her pulse continued very low and fluttering, and she still felt a great sense of sinking, but rather less than usual. She continued in this manner for three days, slowly improving. I gave her aperient medicines and injections, which did not operate very freely. On the third day, I gave her a strong dose of aperients, which produced copious discharges; the pulse, after this, *immediately* began to rise, the sense of sinking almost instantly went off, and she rapidly recovered."

From this case, with one more of his own, and a number compiled from authors, and somewhat elaborately compared through about sixty pages, Mr. Stephens infers, that death may be and frequently is, caused by simple obstruction to the passage of the feces, without the necessary occurrence of inflammation, that the presence of accumulated feces is a circumstance in itself dangerously depressing to the animal economy, which is relieved by purging, and that such obstructions as are here alluded to are often produced by adhesions, which retain folds of intestine in an angular position, or in some other way contract their cavity or impede their action. The presence of such obstructions he infers from the occurrence of most of the ordinary symptoms of strangulation in a hernia, and especially stercoraceous vomiting, accompanied with indications of rapid sinking; which symptoms, at the same time, have come on too gradually, and lasted for too long a time to be reasonably attributed to strangulation, and are not accompanied with marks of inflammation. Some part of them frequently occur in a less degree, or even to a violent and dangerous extent, threatening with the extinction of life, and afterwards subside, generally by free purging. They are most frequently brought on by eating food either indigestible, flatulent, or in too great quantity. The surgeon is seldom called until some severe attack has succeeded to a number of recurrences in the milder forms.

To relieve these distressing and dangerous cases, when the urgency is great, Mr. S. recommends opening the sac, separating the adhesions entirely, and returning the viscera into the cavity of the abdomen. The separation should, if possible, be made with the fingers, or the handle of the scalpel; but if really necessary, the edge of the knife may be employed; the operator gathering up the intestines in his hand, and gently drawing the adhesion on a stretch. Diseased omentum should be excised; and the author further suggests the dissec-

tion of the sac free from its cellular attachments, and the returning it into the cavity of the belly, with the view that its raw and recently divided surfaces should close the inner abdominal ring, by adhering to its inner orifice; the writer seeming to be of opinion that this would effect a permanent cure. He gives, in confirmation, a successful attempt of this kind upon a bitch affected with hernia; in which, however, the abdominal parietes were closed by a quilled suture.

Mr. Stephens proceeds to make some other remarks which our space prevents us from noticing fully. Among these is an attempt to show that *tenesmus* is the best distinguishing sign of obstruction from intussusception, or the presence of foreign bodies in the intestinal cavity; when compared with obstruction from external pressure. A physiological explanation of this will easily suggest itself. Another is the statement, as a fact, in his appendix, that the superiority in size of the female bladder over that of the male, is in all instances a consequence of pregnancy.

In commenting on the above, we remark little of novelty, unless it be in the observations on obstructed hernia. The description of inflamed hernia is certainly sufficiently familiar; it is included in all the common accounts of strangulation; but the other subject may require a little further inquiry. Of the frequent occurrence of cases of long duration, successfully relieved by an operation, no doubt can exist among readers. We quote from Sprengel's History of Medicine, (VII. 182, French Ed.) the case of Saviard, in which this result took place on the 22nd day, as supposed, of strangulation. The details are not given; but it seems hardly credible that a forcible impediment to the circulation could have existed during all that time without destroying the patient's life.

Yet it appears to us that this subject of obstruction has not been overlooked by authors who have preceded Mr. Stephens. Thus, in Mr. Pott's definition, as given by Cooper, "if the prolapsed body cannot be immediately replaced, and the patient suffers pain, or is prevented thereby from going to stool, it is called an incarcerated hernia, a strangulated hernia, or a hernia with stricture." Here it is obviously intended to include all cases of simple obstruction; without necessarily requiring the cessation of the arterial circulation. According to Mr. Hey, quoted in the same place. "So likewise in very large and old hernias, where there is reason to doubt whether the disease is not to be considered as a morbid affection of the intestinal canal rather than the effect of strangulation, purgatives may be useful," &c. And many others have recommended purgatives; under the use of which, as is well known, many cases presenting all the symptoms of strangulation, recover without any resort to the knife. Again, Mr. Samuel Cooper, in a book so common as his First Lines, gives a very neat account of the affection, (3d Am. Ed. II. 96,) in which he refers to "the French surgeons," for his authority. In the Dict. de Med. XI, 103, we have a very good notice of this affection, by M. Murat. It is highly probable that further search would readily furnish many descriptions of this well known affection.

The views of Mr. Stephens, however, would in our opinion, require much confirmation before we should feel authorized to recommend the performance of an operation for the purpose of removing adhesions. Whether, when a hernial sac is already opened, we should make it a rule to separate adhesions and return the viscera to the abdominal cavity, is a very different question, and one

requiring a distinct consideration. Yet even here our author might have found authority quite sufficient for his purpose. See Cooper's First Lines, II. 109; and still more, the Dictionary of Surgery, 5th Lond. Ed. p. 642, col. 1.; as also the Dict. de Med. XI. 114, 115. In p. 115, particularly, we find an allusion to the case of an adherence producing danger from its confining the intestine in an acute angle; which is, of course, to be separated, and the part returned to the abdomen, if this be not rendered impracticable by other causes. Nearly all, then, that remains to our author, is the suggestion that obstruction without arterial and venous strangulation occurs with rather more frequency than is commonly supposed; and that operations should in consequence be performed at a more early period, and with rather more freedom than is at present the case; a precept in which he has the support of many judicious surgeons. B. H. C.

XXVI. *Epidemia Vajuolosa del* 1829 *in Torino con cenni relativi al suo primo apparire in qualche Provincia littorale nel* 1828, *ed alla diffusione dalla capitola a vicinia Provincia dell' Interno nel* 1830. *Aggiuntivi J Lavosi Vaccinici, e le Osservasioni degli operatori.* Par T. D. Griva, del Collegio Medico de Torino, Ve. Direttore Generale delle Vaccinazioni. pp. 249. Torino, 1831.

An Account of the Varioloid Epidemic, which prevailed at Turin in 1829, *together with reflexions on Vaccination, &c. &c.* By T. D. Griva, of the Medical College, Director-General of Vaccination, &c. &c. Published by order of the Secretary of State for internal affairs.

For this very able account of the varioloid epidemic, which ravaged Turin and the surrounding provinces in 1829, we are indebted to its author, a distinguished member of the medical college of that city, and director-general of vaccination. It was drawn up and published by order of government, and not only contains a very lucid and satisfactory exposition of the characters of the epidemic, but likewise some very interesting facts relative to vaccination, its efficacy as a prophylactic measure, and the most efficient means of securing its advantages. We regret that it came to hand too late for a more extensive notice for the present number of our journal. We shall, in our next, however, furnish our readers with a full analysis of its interesting and valuable contents. In the meantime, we beg leave to assure the respected author of our esteem, and our thanks for his polite attention. E. G.

XXVII. *Cases of Cholera collected at Paris, in the month of April,* 1832, *in the Wards of MM. Andral and Louis, at the Hospital la Pitié.* By James Jackson, Jr. Boston, Carter, Hendee, and Co. 1832. pp. 212, 8vo.

The Cholera Spasmodica, as observed in Paris, 1832; *comprising its Symptoms, Pathology, and Treatment. Illustrated by Cases.* By Ashbel Smith, M. D. of North Carolina, officially attached to the Necker Hospital, during the prevalence of the Epidemic. New York, Peter Hill, 1832. pp. 80, 8vo.

The courage displayed by the American medical students, who were in Paris during the prevalence of cholera in that capital, and the devotion to their profession evinced by them, is worthy of all encomium. Undismayed by the terrors of a devastating pestilence, rendered doubly terrible from the excitement of an

ignorant populace, they remained at their posts, devoted themselves most assiduously to attendance on the hospitals, and amidst their arduous labours, they have hastened to communicate to their brethren at home, the valuable results of the experience they collected.

In our last No. we presented to our readers an interesting account of the epidemic at Paris, by Drs. Pennock and Gerhard, two industrious young physicians of Philadelphia; we have now to call their attention to the two creditable memoirs on the same subject, the titles of which are at the head of this article.

The first consists of cases collected in the wards of MM. Andral and Louis, two of the most distinguished pathologists of Paris, followed by some interesting observations, and with tables formed in accordance with the numerical system introduced into the study of pathology by M. Louis. This memoir is by Mr. James Jackson, Jr. son of the eminent Professor of the Practice of Medicine in Harvard University; and is in every respect a creditable performance, and an earnest of future distinction. That this pledge may be redeemed, the son has only to take as his model his father—whose undeviating rectitude of conduct, simplicity of character, and ardent devotion to the advancement of his profession, has placed him on its highest pinacle.

The second memoir is by Ashbel Smith, M. D. of North Carolina, who was officially attached to Hôpital Necker, during the prevalence of the epidemic, and of the zeal with which he attended to his duties, the most emphatic testimony is borne by the principal physician of the hospital. Dr. Smith gives a brief sketch of the first appearance and progress of the disease in Paris, with its symptoms, the post mortem appearances, and treatment. Even at the present moment, when so many elaborate works on the subject have appeared, this little essay has not lost its interest, nor will any one read it without advantage.

QUARTERLY PERISCOPE.

FOREIGN INTELLIGENCE.

ANATOMY.

1. *On Nervous Ganglions, and on the Origin and Nature of the Intercostal Nerve.* According to Professor Scarpa, the ganglions consist entirely of divisions and subdivisions of the nervous filaments which enter into them; they are surrounded by a soft cellular tissue, and imbued with fluids, and these filaments reünite again to pass out from the ganglions. The compound ganglions received filaments from different origins, the cords which pass out from them, are necessarily formed of filaments coming from these same various origins.

The trunk of the intercostal nerve and its branches contain as many filaments as intercostal nerves which come from them, and also nerves of the fifth and sixth pairs; as to the sixth, it is not known whether it gives or receives. The intercostal nerve, to speak accurately, has no separate existence, but is formed by the junction of almost all the others. It is the same with the bracheal plexus; each branch which comes out, carries with it filaments of all those which enter it, (the inferior cervical, and first dorsal.) The inferior branches of the intercostal are the most compound; thus in affections of the bladder, and of the uterus, they disturb the whole body. A question naturally arises, that since the intercostal receives filaments from all the spinal nerves, why is it not subject to the will? The difference observed in the firmness of its texture, compared with that of nerves of sense, is not a sufficient reason; and the effect which has been attributed to its ganglions, of intercepting the effects of the will, is neither proved, nor probable; but the explanation of the fact is found in the confirmation which the opinion of Galen has lately received, by the experience of M. Panizza, relative to the different faculties of the two roots of the spinal nerves. We now know, in fact, that the anterior roots give motion, and that the posterior, which have a ganglion, sensibility. It is the same with the cerebral nerves; and Mr. Charles Bell has shown that the section of the suborbital nerve, (branch of the fifth pair,) destroys the sensation of the lips, and of the nasal region, and that of the facial nerve, (coming from the seventh pair,) destroys the motion of the same parts.

The fifth pair is divided into two parts, the smaller which is distributed to the muscles of mastication, the larger which is appropriated to the senses. The lingual branch of the latter is devoted to the function of taste; but it is the ninth pair which gives motion to the tongue, and to the os hyoides. M. Scarpa thinks, moreover, that the nerve of the eighth pair, upon which he has found immediately after it goes out from the cranium a ganglion, a character which he regards as appertaining exclusively to the nerves of sensation, could only be destined to give sensibility to those parts in which its filaments are distributed, whilst the accessory nerve could give motion to those which are of a muscular nature. Setting out from these facts, M. Scarpa has carefully examined

from what roots the filaments, which go to the intercostals, arise; and he has discovered that these filaments invariably arise from the posterior. A little above the ganglion, these filaments, at first to the number of three or four, and which are afterwards united into one or two cords, pass above the anterior root, and sometimes envelope it, as in a net-work, or even traverse it. Attention and skill are necessary to distinguish these variations. Thus Schmidt is deceived in believing that the filaments of the intercostals come from the anterior root; they certainly arise solely from the posterior, for they originate before the reünion of the fasciculi arising from the two roots. It follows hence, that the fleshy fibres of the heart and of the stomach do not receive filaments from the nerves of motion, but from those of sensation. They owe their excitation to the blood and to the food, and not to the will.

In a second letter, M. Scarpa returns to the character which he attributes to all the nerves of sensation, of having ganglions. The cerebral nerves have them, according to him, whenever they are sensitive. Thus the olfactory has its bulbous extremity. The large portion of the trigemini, ganglionary at their origin, has also the ophthalmic, spheno-palatine, and maxillary ganglions. None of the filaments which pass off from it, go to the muscles. The par vagum hardly passes from the cranium, when it swells out into a ganglion. "It might be objected, perhaps," says M. Scarpa, "that the ophthalmic ganglion comes partly from the motor oculi; I deny this second origin; it comes from the nasal branch of the fifth pair; the little band which passes out from the branch of the motor oculi, destined for the obliquus minor, is a cellular, and not a nervous ligament. This nasal nerve also gives off ciliary branches below the ganglion, and the motor oculi does not give off any; thus the motion of the iris does not depend on the will."

One would be tempted to suppose, from what has been just said, that the muscles of the eye, by an exception of which they would be the sole example, receive only nerves of motion, and not of sensation; but M. Scarpa believes that they also receive the latter. He suspects that the abductor receives a twig of that, which proceeds directly from the brain, and accompanies the nerve of the sixth pair. As to the others, they receive, according to his authority, their sensibility from the filaments, which, passing out from the superior cervical ganglion of the intercostal, turn themselves towards the eye following the course of the carotid artery, the ophthalmic artery, and its divisions. But how is it, that nature, when the ciliary nerves are so near, should cause the former to originate from such a distance? It is a question which the author proposes without attempting to solve. The posterior roots of all the spinal nerves, after having passed beyond the ganglions of the sensitive roots, unite very intimately with these latter. The same union may there be seen on a small scale, as in the great plexuses. These are the sensitive filaments, which, disentangled from the end of the others, go to the skin to constitute the organ of touch. It is necessary then to abandon the idea, that the touch is exercised by the same nerves as motion.—*(Extract of two letters addressed by M. Scarpa to M. Weber.)*

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2. *Formation of the Sub-occipital Nervous Ganglion.*—Sœmmering, Cloquet and Meckel, in speaking of the sub-occipital nerve, say that its ganglion occurs at the union of the two roots of this nerve. The researches of Dr. Vittorini, made upon more than twenty-four subjects, have demonstrated to him in an indubitable manner, that this ganglion is constantly found upon the posterior root, three or four lines before its reünion with the anterior. "I have never seen," says Dr. Vittorini, "the posterior root wanting, and the nerve then formed solely by the anterior root, as Morgagni and Vicq-d'Azyr have sometimes observed. The only anomaly which I have met with, was in the course of the fibres of the posterior root, these fibres were separated into two fasciculi, one of which was situated before, the other behind the accessory nerve, which was seen included in, and interwoven with these two fasciculi. All the anterior fibres are reünited at the accessory nerves in forming a very small ganglion, those of the pos-

terior fasciculus united in part to this ganglion, and in part passed beyond, to be reünited to some fibres of the anterior fasciculus. It is this reünion which forms the remainder of the posterior root, which after passing this point had a regular course."—*Osservatore Medico, July*, 1831.

PATHOLOGY.

3. *Cases of an Eruptive Disease arising from the use of Cubebs.*—John North, Esq. relates in the *London Medical and Physical Journal*, for March last, the two following cases, in which an eruptive disease was produced by the use of cubebs.

"Case I. Capt. P. after trying various remedies for the cure of an obstinate yet trifling gleet, took, of his own accord, large doses of cubebs three times a day. On the fourth day from the commencement of the remedy, he complained of great restlessness, flushing of the face, sickness, and head-ache. On the fifth, he was covered with an eruption from head to foot, which was accompanied by a high degree of sympathetic fever. The peculiar appearances of the eruption I will attempt to describe in the next case, which was more severe, and attended by more strongly-marked characters. Captain P. recovered in a few days, by the assistance of mild aperients, salines, and confinement to the house: he was, of course, desired to discontinue the cubebs. Upon a subsequent occasion, he again ventured to try the remedy, but he gave it up after taking one dose of it, in consequence of feeling the same general symptoms of restlessness, &c. which had preceded the former attack.

"Case II. Madame T. had long laboured under severe leucorrhœa, and, from motives of delicacy, had neglected to consult any medical practitioner. She was recommended, by a friend, to try the effects of powder of cubebs, in doses of a small tea-spoonful twice a day. After the first two doses, she felt feverish, with a tingling and heat over the whole surface of the body; she had rather severe head-ache, and a very disagreeable sensation of fulness in the eyes; the hands and feet felt hot and numbed. On the third day, a 'flush of red' broke out over the whole of the body; and on the fourth, a decided eruption appeared. The cubebs was now discontinued, six doses having been taken. On the fifth day, my attendance was required: her appearance was now peculiar, and rather formidable: her features were so completely changed, as to leave no trace of their natural expression; the face was excessively swollen; eyes turgid and watery; lips puffed, dry, and shining; coryza; hands much swollen, and so stiff that the fingers could not be bent; respiration hurried and difficult; pulse small, and varying from 120 to 130; skin burning hot; intense thirst; tongue very white; constant nausea, and occasional vomiting. She was covered with an eruption from head to foot, which, in some parts, could not have been distinguished from Urticaria febrilis, while in others it had more the appearance of lichen in its papular stage, but with much more intense inflammation around the base of the papulæ than is commonly seen in that disease. A fortnight elapsed before this lady completely recovered. The remedies employed, consisted of purgatives, salines, and mild anodynes at bed-time."

Mr. North says that several other cases of the same kind, but milder in degree, have fallen under his care; and a very striking case is recorded in the *Archives Générales*, for November, 1831. A young man was admitted into La Pitié under M. Velpeau, with gonorrhœa, which had existed for two months. After a few days, he was ordered a mixture containing cubebs, copaiva, and magnesia, in the proportions of two drachms of copaiva to four of cubebs. He took this mixture daily, and on the sixth day he was attacked with violent itching and burning over the head and neck. In the morning, his face was covered with dark red patches, and in the course of a few hours, this appearance of the skin, as well as the itching and sensation of burning, had extended over the chest and arms. The following day the abdomen was attacked in the same manner. On the third day, the efflorescence that had at first appeared, be-

came pale, but the legs and feet now presented a similar appearance. The case might easily have been taken for measles, if the cutaneous symptoms only had been regarded, but there was none of the characteristic constitutional disturbance that attends that disease: the general health was, in fact, undisturbed. In the course of a few days the eruption entirely disappeared; and if any doubt had existed as to its cause, it was completely removed by the following circumstance: about three weeks after his recovery, the patient repeated a dose of the medicine, which he had accidentally kept; the eruption appeared on the following morning, and remained for two or three days.

A similar eruption is sometimes occasioned by the use of balsam copaiba; and two or three cases of the kind are related by Dr. Hewson in the 5th Vol. of the North American Medical and Surgical Journal.

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4. *Case of Rupture of the Kidney.* By James Laidlaw, Esq.—October 11th, 1829. Alexander Elliot, a remarkably fine, healthy young man, twenty-one years of age, while running at full speed, came unexpectedly in contact with the iron palisades of one of the squares, and struck his abdomen against them with such force that he was thrown to the ground by the shock; he immediately got up, and not feeling himself, at the moment, much hurt, walked home, a distance not greater than a hundred yards. Soon after he got home, he became very sick, and vomited, but did not consider it of much consequence, till about two hours afterwards, when, having occasion to make water, he found nothing but blood flowed from the bladder; and he then became alarmed, and, procuring a coach, had himself conveyed to the hospital.

At the time of his admission, when I first saw him, he was pale, cold, and covered with a clammy perspiration; his countenance was anxious, and he was greatly agitated. Upon a superficial view, he appeared far more alarmed than injured. He complained of pain in the belly, particularly in the right hypochondriac region; his pulse was full and regular, at seventy-five. At his request some milk and water was given to him; but, immediately upon drinking it, he vomited it up. Twenty leeches were applied to the abdomen without delay.

In the evening the symptoms became more alarming; the vomiting increased, and was accompanied with constant hiccup, which greatly distressed him, the pain in the belly was also much greater; he rolled about in the bed, was very irritable and restless; the anxiety of countenance was much increased, and the respirations were more frequent than natural: he did not complain when the abdomen was pressed with the hand. As he had not made water since his admission, I introduced a catheter, and drew off about ten ounces of fluid, apparently chiefly blood, and directed that fifteen more leeches should be applied to the belly.

Upon visiting him early the following morning, (Oct. 12th,) he said he was somewhat easier, but had passed a miserable, restless night, and had been greatly distressed by the constant vomiting; his countenance was still very anxious, and he appeared to be suffering a good deal from alarm and agitation. A catheter was introduced, and twelve ounces of bloody urine drawn off: this he said greatly relieved him. Towards night he became much worse; the belly was swollen and tense, and he complained of great pain upon the application of the hand; the vomiting was not abated, and it distressed him much more in consequence of the tenderness of the abdomen. It was found necessary to continue the use of the catheter, and the urine was deeply tinged with blood. Pulse small, sharp and regular, its frequency not increased; tongue natural; skin hot and dry; and he complained of great thirst, which could be only partially allayed by moistening his mouth, as every thing he swallowed was instantly rejected. ℞. Hydrarg. Submur. gr. ij.; Pulv. Opii, gr. ss. statim. Haust. Potassæ Citrat. quartâ quâque hora.

October 13th.—Somewhat better; he has had some sleep during the night, and is greatly refreshed; the belly is less painful, and the swelling is diminished: he has passed about a pint of urine without the catheter. As his bowels were

confined, he was ordered an enema, and it has produced a copious evacuation, which he says has made him feel much more comfortable. Pulse small, sharp, and much increased in frequency; tongue white and moist. V.S. ad ℥xij. To continue the medicines.

October 14th.—He is greatly improved; his skin is cooler, and there is less irritability in the pulse; his bowels have been opened several times, and he passes his water naturally; he suffers very little. The blood drawn yesterday cupped and buffed. Ordered V.S. ad ℥x. Haust. Acetat. Ammon. c̄ Liq. Antim. Tart. ♏x. quartâ quâque hora.

October 16th.—Since the day before yesterday he has been gradually getting better: the pain in the belly has almost gone, and the only thing he now complains of is great thirst and an uncomfortable fulness of the belly. The blood which was taken on the 14th exhibited no inflammatory appearance.

For several days after the last report, every thing appeared to be going on favourably, and he seemed to be getting well rapidly, when suddenly, on the evening of the 21st October, he became much worse; his skin again became hot and dry; his tongue parched and covered with a brown fur; and the anxiety of countenance, which was so apparent at first, had again appeared; he complained of great pain in the right lumbar region; the pulse was full and frequent, but regular. As his bowels had not been opened during the day, an enema was ordered, and he was directed to take the following powder every four hours: ℞. Pulv: Rhei. gr. v.; Hydrarg. c̄ Cretâ, gr. iij. M. fiat pulv.

On visiting him the following morning, (October 22d,) I found him in less pain than the preceding evening, but the other unfavourable symptoms were unabated. In the course of the day he had a severe shivering fit, which lasted for several minutes, and the pulse became very small and quick. Upon examining the belly, the part originally injured seemed to incline to the side, and appeared to contain fluid. He was directed to continue the medicines, and to have hot fomentations to the belly.

He continued in nearly the same condition during the two following days, (October 23d and 24th,) appearing only to get a little weaker; but on the morning of the 26th, it was evident that there was no hope of saving him, as he was sinking rapidly. He complained of no pain in any part; he was perfectly sensible and collected, frequently saying that he had made up his mind to die; his countenance was sallow and very anxious, and he appeared to breathe with great difficulty; the pulse was too quick to be counted; the tongue was black and dry, and the skin hot, and without the slightest moisture. He fancied he should like some soda water, and it was accordingly given him, with small quantities of wine occasionally. At seven o'clock in the evening he died, having survived the accident just fourteen days.

The body was examined eighteen hours after death. Upon opening the cavity of the abdomen, the intestines appeared of a dark sooty colour, which was all that was remarkable in them. The whole of the solid viscera were in a healthy condition, with the exception of the right kidney, which, as had been anticipated, was found to be the seat of the mischief: by the injury it had been broken across just below the pelvis, and in it and the surrounding cellular membrane a large abscess was formed, which contained about three pints of fluid of a light brown colour: this was supposed to be pus mixed with urine.—*London Medical and Physical Journal, Feb.* 1832.

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5. *Case of Propagation of Ringworm by Contagion.*—M. Collineau communicated to the Académie Royale de Médecine the following fact. In an establishment which contains between eleven and twelve hundred females, there is a particular department appropriated for the reception of girls from ten to sixteen years of age, in which they have communications only with each other, and with the persons intrusted with the care of them. In the month of August, 1831, a child with a ringworm on her shoulder, about ten or twelve lines in diameter, was admitted into this establishment. Two months afterwards, one of her companions had a similar ringworm on her arm, and also on her left cheek.

At the end of four months, the greater part of the others were affected with the same disease, attacking the arms, thighs, neck, hands, &c. By the 7th February, no more than three out of seventeen remained who were exempt from the disease, and of these one subsequently, as well as the matron, was affected.

It is impossible, observes M. Collineau, to doubt that these ringworms were communicated by the child admitted into the establishment in the month of August, as previously there were no affections of that kind in the house, and as the dormitory in which she slept was the only one affected. The situation is healthy, and the diet good. The author in reporting these cases of contagion, does not the less acknowledge the rarity of the communication of scaly cutaneous diseases.—*Archives Générales.*

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6. *Calculi in the Veins of the Spermatic Cord, &c.*—In the fourth volume of Meckel's *Archiv. für Physiologie*, Tiedemann detailed some observations on calculi found in the veins. Since then, further information has been communicated by Otto,* Boujalsky†, and Lobstein.‡ Otto found them most frequently in the venous plexuses of the womb and vagina, and occasionally also in that of the bladder. For the most part, the persons in whom they were found were more than fifty years old. He once discovered them in the veins of the prostate in an old man. In all the cases the veins were varicose, and contained coagulated blood, in which the calculi were deposited. In two instances, gouty concretions existed at the same time in the joints; and such was the case in the man in whom the calculi were found in the veins of the prostate.

The concretions were either whitish or yellow, and of a pearly lustre, and they varied in magnitude, from the size of a millet-seed to that of a pea. They were round and oval, sometimes uneven on the surface, and consisted of concentric laminæ. Boujalsky found five calculi in the veins of the spermatic cord of a man fifty-seven years of age; four of these lay detached in the blood, and one was connected with the internal coat of the vein. Lobstein has found them in the veins of the testicles, of the womb, of the bladder and rectum, and once in the veins of the spleen. Dupuytren discovered them in the anterior and posterior tibial veins; and Tilorier in the varicose subcutaneous veins of the leg. Bouillaud has repeatedly seen them in old varices of the lower extremities.

Since Tiedemann's former publication on the subject, he has several times observed calculi in the veins of the bladder, rectum, and womb. The most remarkable instance was that of a man, fifty-one years old, in whom numerous concretions were formed in the varicose veins of both spermatic cords. In the veins of the right, he counted fifteen of these calculi; in that of the left, twenty-one. The smallest were about the size of a mustard-seed, the largest exceeded a line in diameter; they were either round or oval, and of a yellowish-white colour. In general they lay disengaged in the coagulated blood, but some were attached to the inner coat of the vein by means of a very thin transparent membranous covering. In some parts of the varicose dilatations, soft fibrous masses adhered to the internal tunic of the vein, which Tiedemann supposed to be the nuclei of similar concretions. Cruveilhier has seen calculi adherent to the inner coat of the vein.

Gmelin subjected some to analysis, and found them to consist of—

Animal matter - - - - - - - -	27.5
Phosphate of lime - - - - - - - -	53.5
Carbonate of lime - - - - - - - -	15.5
Magnesia and loss - - - - - - - -	3.5
	100.

Two explanations have been offered as to the origin of these concretions. Tiedemann, Otto, and Lobstein, conceive that they are formed in the varicose

* Neue seltene Beobachtungen zur Anatomie, u. s. w. Berlin, 1822.
† Voienno-Meditsinski Journal. Petersburgh, 1827.
‡ Traite d'Anatomie Pathologique. Paris, 1829. T. i. 504.

dilatations of the veins, from the deposition and aggregation of the earthy matters of the blood. Others have imagined that they originate in the coats of the veins, in a similar manner to the calcareous concretions in the coats of arteries, and are subsequently detached. Their rounded form, and uniformly smooth surface, are opposed to the latter explanation. When they are attached to the inner coat of the vein, Tiedemann suggests that the connexion arises from inflammation excited by their presence, and the consequent effusion of coagulable lymph.—*London Medical Gazette, July*, 1832, *from Tiedemann's Zeitschift für Physiologie, iv. b. 1 heft.*

7. *Case of Puerperal Peritonitis, followed by Ascites and the Spontaneous Perforation of the Abdominal Parietes.*—An instance of this is related by Dr. PUNTOUS in the *Revue Médicale*, for May last. Two openings were formed, one on the seventeenth or eighteenth day of the disease, beneath the umbilicus; another two days afterwards in the upper part of the left hypogastric region.

MATERIA MEDICA.

8. *New Principle in Cinchona.*—M. VAN MONS has discovered a new principle in the bark of the *Cinchona montana*, which is white, crystallizable, and extremely bitter. The discoverer calls this *Montanine*, and says that he has cured intermittent fevers in three days with it, in doses of two grains a day.—*Buchner, Repertorium fur die Pharmacie.*

9. *Lunar Caustic Blister.*—In the 5th Vol. of the *Transactions of the Medical and Physical Society of Calcutta*, we find an article by J. C. BOSWELL, Esq. in which the lunar caustic is recommended as a substitute to cantharides for producing vesication. Mr. B. has used that remedy in pneumonia, phthisis, rheumatism, dysentery, &c. with, he says, decided utility. The blister is formed by slightly wetting the part, and then slowly drawing the stick of lunar caustic over the surface to be blistered, first longitudinally, and then across. The fluid is discharged by small punctures, in about ten hours after the application of the caustic; and no covering being used throughout, the surface becomes in two or three days sufficiently dry to admit of a second application, in the same place if necessary. Mr. B. has put on more than thirty of these blisters in the course of treating a pulmonary case, making the intervals longer as the cure proceeds.

The advantages which the nitrate of silver, applied as a blister, possesses over cantharides, according to Mr. B. appears to be that its action is more immediate, and effect more powerful; it does not affect the urinary organs—requires no dressing—is easy of application, and always available—being so easily carried about.

Mr. Twining, the intelligent secretary of the society, has appended to this paper some remarks confirmatory of the statements of Mr. Boswell. He says that he has found the caustic blisters very useful in chronic rheumatism of long duration, affecting the joints, and unattended with pyrexia, and with little or no acute local inflammation.

10. *On the Diuretic Properties of Lichen Vulgaris.* By Dr. STEVENSON, of H. M. 13th Light Dragoons, at Trichinopoly.—The Lichen vulgaris is found in abundance at Bangalore and Trichinopoly; its Tamul name is Kull-pashie; and its decoction in milk is used by the natives in that part of India as a diuretic; but they are not acquainted with its efficacy when applied as a poultice over the loins. Dr. Stevenson recommends the lichen to be boiled in water, and bruised in a mortar; it is then to be applied over the region of the kidneys, as a poultice, and renewed twice a day: using at the same time only laxative me-

dicines, when requisite. Dr. S. mentions the case of a man, who had suffered for many months from dropsy, his abdomen being very tumid and undulating; urine scanty; extremities œdematous; countenance bloated, and skin harsh and dry. A poultice of Lichen vulgaris was applied over each kidney, and produced its diuretic effects so freely, that a quart of urine was voided every second hour, to the interruption of rest. In ten days the circumference of the man's belly had decreased a foot: the dropsy was cured, and the man's health restored. The remedy was used in July, 1829, and the patient remained well when last heard from, sixteen months after. The 2d case was a Dragoon, who had anasarca, the symptoms of which were speedily removed, but the disease returned, and the man died; when the dropsical symptoms were found to be connected with disease of the heart. Dr. S. knows of the lichen being used in a third case, with benefit; but the patient was not under his care, and used other medicines at the same time; therefore, the effects of the remedy might be doubtful in that case. The Lichen vulgaris is commonly found in the Deckan, growing on rocks, and the lower branches and denuded roots of the larger trees.—*Transactions of the Medical and Physical Society of Calcutta, Vol. V.*

11. *Remarks on the Medical Properties of the Haritakee, or Myrobalan.* Translated from several Native Medical Works, by Rajah Kalikissen, and read at the Medical Society's Meeting, on the 7th of May, 1831.—The fruit of the Terminalia chebula, which is named Haritakee in Bengal, and Myrobalan in English, is much used as a medicine by the natives of India: their modes of preparing and administering this medicine, and its combination with other substances, is varied according to the season of the year in which it is administered, and the effect intended to be produced. Several kinds of the haritakee are employed medicinally; that chiefly in use, is the small black myrobalan, which is called in Bengallee, Jungeia haritakee. It is considered a mild purgative, of a moderately warm description, which has some tonic properties, and is often used with great advantage in many chronic complaints. It is said to remove obstructions, improve the general health, and strengthen the digestion; relieving bilious disorders, and hypochondriacal affections, and "increasing the happiness of life." A regular course of this medicine is prescribed for the purpose of producing the above effects; and it is recommended to be continued for several months. By this account, haritakee seems to produce all the good effects of Mr. Abernethy's blue pill system, besides many others of great benefit; without any of the evil consequences frequently arising from the habitual and protracted use of mercurial preparations. The efficacy of this medicine is so much extolled, that it seems well worthy of a trial on Europeans, whose health has been impaired for a long time; and especially where the principal disorder is referred to weak digestion, torpid bowels, bilious disorder, and general debility; with lowness of spirits, and emaciation. As an aperient, the usual dose is twenty grains of the black myrobalan in powder, with ten grains of black salt, repeated every morning. In protracted chronic diseases, the haritakee should be continued for three months: during the first month, the combination with black salt as above stated; during the second month, twenty grains of haritakee, with ten grains of brown Jagry sugar, are ordered to be taken every day; and for the third month, twenty grains of haritakee, with ten grains of common salt, and ten grains of caraway seeds in powder.—*Ibid.*

PRACTICE OF MEDICINE.

12. *Treatment of Gastrodynia of* Dr. Graves.—Sept. 1828. Rev. I. D——y, æt. 36, rather corpulent, of temperate habits, has suffered for three years from violent attacks of gastrodynia. They last sometimes for forty-eight hours, and during their continuance the agony is described to be so great as to make even

death a desirable boon. The symptoms during an attack are—sensation of straitness in the stomach, with exquisite unintermitting pain, the pain shooting into both hypochondria; dry retching, and rejection of every kind of food and medicines; the countenance, during the attack, pale and expressive of distress. He is not able, (although his sufferings make him very attentive to this point,) to trace any connexion between his complaint and different kinds of food. The attacks usually seize him in bed, sometimes set in at once with great intensity, at other times commence with comparative mildness, progressively increase in intensity, and then disappear gradually in the same manner as they came on. He is rendered somewhat more liable to an attack by confinement of the bowels, and feels relieved after full evacuations; the agony suffered until these are procured is extreme, and even then the relief comes but slowly, and always leaves an internal soreness about the epigastrium, which continues with very little diminution for weeks, and is always proportionate to the previous intensity of the pain. The average frequency of the attack is about one in every two or three months. He resides in the country, but during his present visit to town he has had one of his attacks, which gave me an opportunity of seeing him in it. It came on late in the evening, without any apparently assignable cause, the pain, as he had in his previous account of some of the fits described it, being at first slight, but steadily increasing in intensity, accompanied with great anguish, rejection of every thing from the stomach, and frequent retching; the eyes were watering, countenance pale, and expressive of great suffering. The previous history leading me to view the disease as arising from morbid sensibility of the nerves of the stomach, I had determined, should an opportunity offer while the patient was under my immediate observation, to exhibit opium. I should, perhaps, have observed, that all the preceding attacks had been treated in the country by bleeding or leeching, purgative medicines, and enemata. I gave him fifteen drops of *tinct. opii* in half a glass of tepid water, without an admixture of any of the stimulants or aromatics, as ether, fœtid tincture, &c., which are frequently, but, I believe, injudiciously, in many cases added to opium, under the supposition of increasing its virtues. In a few minutes after taking the draught the stomach became settled, the pain was checked in its progressing intensity, and soon after began to die away, leaving behind it a very trifling soreness, which had nearly quite disappeared on the following morning. This was the first occasion on which he had passed through an attack in this manner.

From the date of the above observations, Sept. 1828 to July, 1831, I had frequent opportunities of seeing this gentleman, and he never, during that space of time, experienced any symptom of relapse. Since July, 1831, I have not seen him, but I may be almost certain, from his silence, that he has continued to enjoy the same immunity up to the present May, 1832.

Concerning alkalies I may remark, that the liquor potassæ causticus, although not so well suited to be used as a domestic medicine, is much preferable to magnesia in relieving acidity and heart-burn.—*London Medical and Surgical Journal, July*, 1832.

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13. *Furious Delirium, consequent on the Repercussion of Erysipelas, cured by recalling the Inflammation.*—A man, aged forty-five years, was wounded the 24th November last in the thigh by a stabbing instrument, which penetrated four inches, and grazed the femoral artery without injuring it. M. Blandin found him in the following state: face red, pulse 100, head-ache; the edges of the wound red and painful; he was bled and put on low diet. The next day but one his state was very alarming; face red, pulse 130, look wild and stern; complete loss of intellectual faculties, furious delirium, violent movements of the limbs, &c. On interrogating his parents as to what had passed, M. B. learned that the thigh, in the situation of the wound, had become of a purple red some hours after his visit, with great heat and pain, and that they had applied on the part compresses dipped in cold water and vinegar; that under the

influence of this treatment, the redness, and even the pain, had completely disappeared; and there remained but a slight yellowness in the part, and finally, that the cerebral symptoms came on suddenly afterwards with extreme violence. M. Blandin immediately bled him, applied twelve leeches behind the ears, sinapisms to the feet, a purgative injection, and friction with tartar emetic ointment, to the part which had been the seat of the erysipelas. The fifth day the inflammation returned, and extended over the internal and superior third of the thigh. The cerebral symptoms disappeared, and the patient complained only of head-ache and lassitude. The following days the erysipelas extended, and considerable fever set in; this was combated by frictions with mercurial ointment, and in eight days the patient was completely recovered.—*Archives Générales.*

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14. *On the Treatment of Habitual Constipation.* By Robert J. Graves, M. D. &c.—In many chronic diseases, and in habitual constipation, it is of the greatest consequence to procure daily and regular discharges from the bowels. *Lavements* effect this purpose most conveniently, and possess the advantage of not interfering with or weakening the digestive functions of the stomach and upper portion of the alimentary canal. Many persons, however, particularly females, have an insuperable objection to this method of obtaining relief, and acquire the habit of taking aperient medicines whenever their bowels are confined.

Various causes have combined to render blue pill and calomel almost popular remedies, to which many have recourse when their bowels are irregular, or the stomach out of order. Indeed, it is quite incredible what a number of persons are in the habit of taking these preparations, either by themselves, or combined with other purgatives, whenever, to use the common expression, they feel themselves bilious. This habit sooner or later induces a state of extreme nervous irritability, and the invalid finally becomes a confirmed and unhappy hypochondriac; he is, in fact, slowly poisoned, without the more obvious symptoms of mercurialization being at any time produced.

It is almost unnecessary to observe, that although saline aperients give temporary relief, they afterwards increase the tendency to constipation, and weaken the stomach. The class of purgatives least liable to objection consists of magnesia, aloes, rhubarb, colocynth, &c. for exhibiting which, many well-known and excellent formulæ are used. But even these substances, whose debilitating effects on the stomach are not near so great as that of mercurials and salts, are attended with the disadvantage of being required in larger doses in proportion as the bowels become accustomed to their action. To remedy this evil, Dr. Elliotson has suggested a valuable combination, consisting of compound extract of colocynth with minute doses of croton oil. This I have frequently given with the best effects; but it is liable to a serious objection, for unless the croton oil be perfectly mixed with the mass, some of the pills may be too powerful, while the others are comparatively inert, and consequently the patient is exposed to the danger of hypercatharsis, as I have twice witnessed, although in both cases the medicine had been prepared in the shop of a respectable apothecary. The following combination will, in general, serve to obviate costiveness, without diminishing the appetite, or being attended with the necessity of the dose being increased as the patient becomes accustomed to its use:—℞. Electuarii sennæ, ℥ii.; Pulv. supertart. potassæ, ℥ss.; Carbonatis ferri, ʒii.; Syrupi zingiberis, q. s.; Ft. electuarium. For the first few days I generally add about two drachms of sulphur to this electuary; but as soon as its operation has been established, the quantity of sulphur may be diminished one-half, and at the end of a week it may be omitted altogether. The dose must be regulated by its effects, but in general a small tea-spoonful in the middle of the day and at bed-time will be sufficient.

The value of the carbonate of iron as a tonic aperient has not been duly appreciated; I have succeeded in curing, with it alone, a practitioner of emi-

nence in this city, who had been long subject to extreme constipation, and had been reduced to the necessity of taking an enormous dose of purgatives almost every week.

When injections carefully administered with Read's syringe fail to remove obstinate constipation, which they will sometimes, though rarely do, other means must be resorted to. Some practitioners are in the habit of giving one dose of active purgatives after another, adding to the strength of each dose in proportion to the obstinacy of the case. This is an imprudent and hazardous mode of proceeding. In such cases, the stomach will generally be capable of retaining castor oil; and I prefer giving repeated doses of this medicine to any other when the bowels display such an unusual degree of obstinacy, inasmuch as it may be safely accumulated in the alimentary canal, and will in the end procure evacuations without any of the dangers which attend repeated doses of acrid and drastic substances. I generally commence with two ounces, to be repeated every second hour, until the desired effect is produced. I do not recollect who it was first made the important observation, that in obstinate constipation the first dose of castor oil must be large, but when this has acted on the bowels, the dose may be gradually diminished, provided that the medicine is continued every day for some time. I have verified this in private practice, and lately had a patient in the Meath hospital whose bowels had resisted injections and the strongest cathartics. Three ounces of castor oil continued for two days in succession, two ounces on the next day, and one ounce on the fourth, were found quite effectual. In some, the daily dose may be thus gradually diminished to a tea-spoonful at bed-time.

When the tendency to constipation is habitual, and the patient is not effectually relieved by the daily use of injections, and when the peculiar circumstances of the complaint render the administration of aperient medicines by the mouth inadmissible, great advantage may be derived from the application of purgative liniments to the abdomen. The one I have found most useful consists of four parts of castor oil and one part of tincture of jalap. This must be diligently rubbed into the region of the stomach every morning before the patient rises, and it must be done under the bed-clothes, least the unpleasant odour should sicken the stomach. I am indebted to a medical friend for this suggestion, which I used with success in the case of a young gentleman, whose state had become almost hopeless.

In constipated habits, I have likewise occasionally derived very remarkable benefit from the use of nitric acid given in sufficient doses. It seems, like the carbonate of iron, to possess the advantage of combining tonic with aperient qualities.

In connexion with this subject, I may remark, that long-continued and repeated attacks of constipation, by enlarging the cæcum and colon, lay the foundation of other diseases. This happens most frequently in females, but is not uncommon among males. In such cases the enlargement of the guts may occasion either of two distinct forms of disease, both attributable to the retention and accumulation of hardened fæces. In one form the symptoms are calculated to mislead the medical attendant, by inducing him to believe that his patient is labouring under chronic hepatitis. Pain and tenderness, and in some, hardness, or even a degree of enlargement, are perceptible in the right hypochondrium, while the patient's aspect is bilious, and he not unfrequently complains of pains in the right shoulder. At times he is subject to violent fits of colic, or to what he compares to cramp in the stomach, particularly after the bowels have been confined, after eating vegetables calculated to degenerate flatulence, or after exposure to cold.

In the other form, the general health suffers less; the pain and other local symptoms referred to the right hypochondrium are not complained of, but the patient is occasionally subject, particularly on exposure to the action of the causes before enumerated, to violent attacks of vomiting and pain in the belly, which are accompanied by the characteristic symptoms of intestinal obstruc-

tion. The circumstance that the immediate attack was apparently induced by some palpable and known cause, such as an error in diet, or exposure to cold, may here deceive the practitioner, and cause him to overlook the fecal accumulation, without whose removal recovery cannot take place. I and two other practitioners were several times deceived in the case of a gentleman, of a robust constitution and great strength of body; and the true cause of the sudden and dangerous colics to which he was subject, was not discovered until he happened to mention, that when a young man, he seldom went to stool more than once a week. This led to the suspicion of an enlarged colon, and ever since the attacks have readily yielded to large injections administered by means of a Read's syringe, without which instrument he now never ventures to travel. The practical point that strictly claims our attention is, that the period of life at which the patient becomes subject to these attacks, is often long subsequent to the cessation or diminution of the habit of constipation, and consequently the physician will not perceive the true cause of the complaint unless he questions the patient very accurately.—*Dublin Journal of Medical and Chemical Science.*

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15. *On the Exhibition of Opium in Large Doses in certain Diseases.*—The second No. of the *Dublin Journal of Medical and Chemical Science*, contains some interesting remarks by Dr. Stokes on this subject. From the facts he has recorded, he deems the following conclusions justifiable.

1st. That in certain cases of inflammation of serous and mucous membranes, where depletion by blood-letting, or other antiphlogistic measures, are inadmissible, and the system in a state of collapse, the exhibition of opium has a powerful effect in controlling the disease.

2d. That under these circumstances the remedy may be given in very large doses, with great benefit and safety.

3d. That its effect then is to raise the powers of life, and remove the local disease.

4th. That the poisonous effects of opium are rarely observed in these cases; the collapse and debility of the patient appearing to cause a tolerance of the remedy.

5th. The cases in which the utility of this practice has been ascertained are as follows:

Simple peritonitis, in a stage where bleeding cannot be performed. Low puerperal peritonitis. Peritonitis from perforation of the intestine; from the opening of an abscess into the sac; or lastly, after the operation of paracentesis in debilitated subjects. Violent diarrhœa, supervening in exhausted subjects. Phagedenic ulceration of the throat, in similar individuals. And cases of chronic gastritis, and gastro-duodenitis in patients exhausted by the long continuance of the disease.

6th. The cases in which this mode of treatment would be probably useful are, peritonitis from rupture of the bladder, or uterus, traumatic rupture of the intestine, or after the operation for strangulated hernia.

The last observation which I shall make here is, that in most of these cases, particularly in those of diseases of serous membranes, wine was given in conjunction with the opium, and in all the patients were supported by a lightly nutritious diet.

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16. *Dropsy cured by Muriate of Gold.*—Dr. Wendt relates in *Rust's Magazin*, B. XXV. eight cases of dropsy, of which seven were cured by the muriate of gold; the eighth case was complicated with consumption. This remedy has been employed for several years in the hospital at Breslau, and with success. Most of the cases were the sequelæ of intermittent fever.

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17. *On the Cure of Amenorrhœa by Leeches applied to the Mammæ.* By Charles Loudon, M. D. of Leamington Spa.—There are but few of the sympathies which

exist between the remote parts of the body which so decidedly manifest themselves as that between the *uterus* and *mammæ*. It would, therefore, be useless to point out how many physiological and pathological facts demonstrate this in practice. The father of medicine was not ignorant of this great sympathy, and availed himself of it therapeutically; for in floodings he recommends dry cupping to be practised on the breasts, with the view, no doubt, of causing a revulsion, and exciting a new action in the womb.

Reflecting on this principle, it occurred to us, that if an action could be induced in the capillary vessels of the *mammæ*, the womb might in other diseases be made to sympathize with these parts. Leeches seemed to be the most likely means of producing this action, and in a case of *amenorrhœa* of two years standing, two leeches were applied to the lower part of each breast for a month, repeating them on alternate days. In three weeks the *mammæ* swelled to an enormous size, giving a sensation to the patient as if they would burst. About the end of the month menstruation came on, and the young lady is now the mother of two children. Several other cases in which the leeches have been tried, have been followed with the same results, and no medicine has been used excepting an aperient to keep the bowels open.

Although this remedy is submitted to the profession as a very certain means of exciting uterine action in this disease, and is founded both on the principles of physiology and pathology, it is not held up as a specific in all cases of amenorrhœa, and is not intended to supersede, but to be combined with, the other auxiliaries in the treatment of that disease. Hence purgatives, local and general, vapour baths, hellebore, and the other remedies which experience has pointed out as useful, should not be neglected. Nor is the author of the present notice aware that this practice did not exist at some previous time in the history of medicine, although, if it did exist, on what grounds it was abandoned, it is difficult to conceive. Leeches were used in medicine long before the Christian era; mention being made of them both by Pliny and Galen.—*Edinburgh Medical and Surgical Journal, July*, 1832.

OPHTHALMOLOGY.

18. *New Method of operating in Ectropion.* By Dr. Dieffenbach.—The instruments necessary for this operation, are a small straight scalpel, with a narrow one-edged blade, a double-edged curved scalpel, a pair of forceps, and insect needles.

The operation, (we are detailing that for the lower eyelid,) is commenced by a semilunar cutaneous incision, which is made at some lines distance above the inferior edge of the orbit, directing the instrument from right to left, so that for the right eye the incision is commenced below the external; for the left, below the internal angle of the eyelids, supposing that the operation is performed with the right hand. This incision, which must be parallel with the inferior edge of the orbit, should be about two-thirds of the length of the eyelid, and exactly in the middle. When the incision has extended to the cellular tissue, the skin is to be detached for a certain extent from the tarsus, and the conjunctiva is then to be pierced, and the internal wound enlarged to the same size as the external. The conjunctiva and the tarsus which adheres to it, are then to be drawn through the external opening, a small portion of the conjunctiva being removed, the lips of the external opening are to be brought together, having between them the conjunctiva and the tarsal cartilage. This is to be effected by the finest insect needles, and threads twisted, as in the operation of hare-lip, after which the ends of the needles are to be bent, and cut close on the threads. The operation is the same for the upper eyelid.

Cold applications are made use of, and if necessary the antiphlogistic treat-

ment. The needles may be removed between the third and sixth day. The method of operating is explained by plates.—*London Medical and Surgical Journal, August*, 1832, *from Rust's Magazin.*

19. *On the Efficacy of Strychnine applied to Blistered Surfaces in Amaurosis.*—Dr. Stevenson states, that he has derived benefit from sprinkling powdered strychnine on blistered surfaces of the temple, in cases of amaurosis of many years duration. Half a grain of strychnine is repeated twice a day, until tremors of the limbs are produced. The same medicine has also been occasionally used with benefit, in a similar manner, in cases of local paralysis, i. e. paralytic affections of a few muscles, without impaired state of the general health. Dr. S. directs the strychnine to be prepared, by boiling nux vomica in water, and evaporating the decoction to the consistence of a syrup; lime is then to be added, that it may unite with the acid, and set the strychnine free, which may be separated from the lime, by means of alcohol, and obtained by evaporation; if the strychnine be required in greater purity, it is to be redissolved in alcohol and crystallized.—*Transactions of the Medical and Physical Society of Calcutta, Vol. V.*

SURGERY.

20. *Case of Chronic Hydrocephalus treated by Puncture.* By R. C. Russel, Esq. of Aberdeen.—Christian Littlejohn, whose age is eight months, was affected with chronic hydrocephalus. Her mother observed a few days after birth a greater separation of the bones of the head than natural, after which its size began to increase very rapidly. Eleven weeks after birth, I was requested to see her along with my friend Mr. Moir, Lecturer on Anatomy in this place. By that time the head had acquired an enormous size, it measured in circumference twenty-three inches, and from the meatus of one side to that of the other, across the vertex, fifteen and a half inches. There was a constant rolling of the eyes, and squinting, but there was no unusual dilatation of the pupil, which contracted readily on the application of light. The bowels were irregular, and she was affected with slight startings during sleep. Various methods of treatment had been adopted, viz. compression, blisters, mercury, diuretics, &c. but in spite of these measures the head continued to increase. As the general state of her health appeared good, I resolved upon trying the operation which has been recommended, of gradually discharging the water by puncture. The operation was accordingly performed on the 25th August, six days after my first visit. The instrument which I employed was a trocar such as is used in hydrocele. I introduced it about half an inch in depth on the right side of the anterior fontanelle, and three ounces of serous fluid were discharged through the cannula. A piece of adhesive plaster was placed over the puncture, and a roller applied around the head. She slept well that night, but next day she was slightly feverish, and continued so for two days afterwards, when she appeared as well as before the operation.

On the 4th day of September, the puncture was repeated in the same manner on the opposite side, and five and a half ounces of turbid serum were evacuated, containing several flakes of lymph. No unfavourable symptom followed. On the 15th September, the size of the head appeared much lessened, and was found to have diminished two and a half inches in circumference, and two and a quarter across the vertex. Ossification had made considerable progress. A large opening in the frontal bone, which extended from the bregma to the nose, was completely filled up, while those in other parts were much diminished. In again using the trocar, only an ounce of fluid was discharged. On the 5th of October, I inserted the trocar near to the part I first punctured, and introduced it as far as the meninges, but only half an ounce of fluid passed through the cannula; I therefore reintroduced it, and entered it obliquely, about an inch and

a half in the direction of the ventricle, and upon withdrawing it, nine ounces of serum were discharged in a continued stream. The wound was closed, and a roller applied tightly around the head. Immediately after the water was discharged, the pulse became feeble, and she was faint and weak, but during the evening she fell asleep, and awoke an hour afterwards apparently much refreshed. To my great surprise, not one unfavourable symptom followed. The pulse indeed became more regular than it had hitherto been, the startings during sleep were not so frequent, and she appeared in other respects better, with the exception of her bowels, which continued to discharge stools of a dark green colour. She continued to improve for nearly three weeks afterwards, when her former symptoms gradually returned, and an obscure fluctuation could be perceived by pressing with the fingers above the anterior bregma. Small doses of calomel were administered till the mouth was affected, which shortly produced an absorption of the fluid, and a removal of all the hydrocephalic symptoms. Since then, she has had no relapse, and has enjoyed almost uninterrupted good health. She is a stout and lusty child, and her size uncommonly large for her age. The bones of her head are now complete, excepting the anterior opening, which is closing. The size of the head is less by four inches in circumference, and two and a half across the vertex than it was previously to the first operation. With the exception of Dr. Conquest's two cases, I am not acquainted with another in which the ventricle has been punctured for the relief of water in the head. In the cases of Rossi, and Dr. Vose, the water between the membranes only was evacuated. An opinion is entertained by several, that this operation is not only a very dangerous but an extremely doubtful one. I trust, however, that the result of these cases, will prove that such fears are in a great measure groundless, and that, under favourable circumstances, the chance of cure is such as to justify its performance.—*Edinburgh Medical and Surgical Journal, July*, 1832.

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21. M. Dupuytren *on the Consolidation of Fractures of the Neck of the Femur within the Capsule.*—Sir Astley Cooper says, "that in all cases of transverse fracture of the neck of the femur within the capsule, which he has had occasion to examine, there never was seen an osseous callus." "The dissections which I have made," adds this illustrious surgeon, "have convinced me that the fragments of the fracture of the neck of the femur, when this happens within the capsular ligament, did not ever unite by an osseous callus; the reünion was made by a ligamentous substance only, as in fracture of the patella." Persuaded that the consolidation of the neck of the femur is impossible, Sir Astley has made experiments on living animals, which have confirmed him in his opinion. The English surgeons have equally adopted the opinion of their co-patriot. Baron Dupuytren, on the contrary, is of opinion that this consolidation may take place. A considerable quantity of anatomical pieces, he says, "representing intra-capsular fractures of the femur, well consolidated, are to be found in the different museums. Those contained in the cabinets of the faculty of Paris, and of the amphitheatre of the Hôtel-Dieu, really prove that this consolidation, with or without deformity, is real. Sir Astley Cooper has probably seen these fractures of the neck of the femur, which had not been cured, or which have been maltreated, or which have been partial. This is the only manner to explain the opinion of the English surgeon, which appears to us to be evidently erroneous. The examination of these pieces of pathological anatomy, is eminently proper to convince us of the reality of the consolidation of this intra-capsular fracture, does not appear, nevertheless, to have produced this effect on other English surgeons who have visited the museum of our faculty. Mr. Cross is said to have considered with care the pathological pieces preserved in the school of medicine of Paris, and not one among them did appear to him to be of a nature to prove that osseous reünion had ever happened, when the head was completely separated from the capsular ligament, and when it did not communicate with the rest of the body by the round ligament.

"When any one inspects the specimens shown in the Hôtel-Dieu, he must be convinced of the consolidation. For myself, I am firmly convinced of it, notwithstanding the contrary opinions of the English surgeons.

"Let us now consider the theoretical and practical reasons in favour and against the possibility of consolidation of intra-capsular fracture of the neck of the femur.

"It is said that the superior fragment contains very few vessels, that it forms a true foreign body in the articulation. This assertion is untrue; the head of the femur receives evidently vessels from the cotyloid cavity by means of the round ligament. These vessels, without being very numerous or very large, can nevertheless suffice for the nutrition of the superior fragment. Again; the synovial membrane surrounds the cartilage, and forming at its base a little *cul-de-sac*, which possesses distinct portions of cellular tissue, and in which will be found a number of vessels. As to the inferior fragment, it receives a great number, by the principal nutrient artery of the bone, which enters at its posterior part, and which forms in the whole extent of the bone numerous ramifications which nourish it. Finally, by the arteries which surround it, by those which appear in the digital cavity of the great trochanter, and by all those which penetrate in the spongy tissue of the bone, and which sometimes run over its surface. The fibrous tissue, which envelopes the neck of the femur, contains a great quantity.

"It is therefore evident that the inferior fragment receives many more vessels than the superior one, whose vitality is less active, more languid; and that for effecting the consolidation, the inferior fragment which enjoys a free exercise of all these vital properties, performs almost alone the consolidation; but it is not less true, that the superior fragment contributes to the process. The assertion relative to the absence or paucity of the vessels destined to nourish the fragments, is therefore valueless; the anatomical examination of the parts completely refutes it.

"A cause which has been considered almost insurmountable to the reünion of the fragments of the neck of the femur, is the absence of periosteum about this part of the bone. Here is a grand error; the neck of the femur possesses a periosteum, thin, no doubt, but still apparent, and if not so capable of nourishing as that of other bones, nevertheless it is real. This thinness is a difficulty, and by no means an insurmountable obstacle to consolidation.

"Others have said that the synovia continually bathes the fragments, and renders consolidation impossible. This reason would be good if the same anatomical disposition which is seen in various points of the osseous system prevented in any way the formation of callus. For no one is ignorant that fractures which penetrate into the joints consolidate very well, and the same thing happens to the olecranon and patella; in these cases it cannot be contested but the synovia bathes the fragments. Every one admits the consolidation of the olecranon, but some contest that of the patella. I shall relate a fact, which proves this beyond all doubt. A man fell upon both his knees, and fractured his patellæ, one longitudinally and the other transversely; the femur was cured without any deformity; the latter separated for some lines. The man died some years afterwards, when the longitudinal fracture could scarcely be discovered, except by a slight inequality in the ridge of the fracture. The other was all consolidated. These cases prove that fragments, bathed with synovia, may be perfectly consolidated. It is not the presence of synovia that offers an obstacle to that of the neck of the femur. The true cause which impedes, or renders very difficult, the exact and solid consolidation, and above all the great deformity, is the displacement of the fragments, their want of apposition, whether the fracture is within or without the capsular ligament."

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22. *Case of Chronic Hydrocephalus cured by Puncture.* By Professor Graefe. —A boy, whose head from its birth had been preternaturally large, but who was

otherwise healthy, was, at four months old, admitted into the University Hospital at Berlin: it was then pale without being emaciated, and well made. The head, however, showed symptoms of chronic hydrocephalus; the face was small in comparison to the cranium; the hair was fine, light-coloured, and very thin; the fontanels were widely open, and the sutures unclosed; the bones of the skull mobile, thin, and little advanced in their ossification: the greatest circumference of the head was eighteen inches and a quarter: fluctuation could be perceived every where, and especially at the anterior and posterior fontanels; when pressure upon one of which was made, the other presented a hard translucent tumour. Not any of the medical means employed had the least salutary effect, and hence M. Graefe determined to try whether puncture would afford relief.

Having compressed the great fontanel so as to determine the fluid towards the small one, he introduced a moderately-sized cataract needle, at first vertically into the fontanel close to the side of the bone, and then, giving it an oblique direction, carried it onwards about a third of an inch. The liquid, which was viscid, dropped out but slowly; the operator, therefore, withdrew the cataract needle, and introduced in the same way a fine trocar, and, as soon as the cannula was opened, a transparent yellowish-brown fluid gushed out in a free stream. In about half a minute the cannula was closed, with the intention of subsequently reöpening it after the lapse of a few minutes, which was done several times, the skull being, during the whole period, gently compressed by the hands of an assistant applied on either side. When twelve drachms of the fluid were discharged, the infant's eyes became suddenly dull, the pupil contracted, the countenance pale and altered, and the action of the heart and the pulse more feeble. The cannula then was immediately withdrawn, the wound closed, and the head compressed by the application of strips of adhesive plaster.

These symptoms did not disappear for several hours, notwithstanding the exhibition of stimulating medicines, which were prescribed; and the child remained restless, slept little for the two following nights, cried much, and took the breast but seldom.

The same symptoms occurred after each subsequent operation, but it was found that the child became completely restored in from about ten or fourteen days. At first only about twelve drachms were evacuated after each puncture, subsequently twenty were discharged. Between the earlier times of operating, the little patient took, morning and evening, the eighth of a grain of calomel, and the sixteenth of a grain of foxglove; but this powder causing nausea, it was changed for two or three grains of calomel with magnesia, to be taken twice a day, two or three times a week, the head being bathed assiduously with squill, vinegar and water, just warm; for after cold applications, which were tried several times, the infant was always uneasy, pale, and faint, insomuch that convulsions were feared. The head diminished in diameter two or even three lines after each operation, and by degrees the dimensions of the skull were reduced to a conformity with the face and the rest of the body. The fluctuation, and the mobility of the cranial bones diminished; the sutures closed, and the general state of the patient was improved. The punctures were repeated eleven times at the following periods during the year 1829: viz. the 8th, 15th, and 23d of January; 19th of February; 5th and 19th of March; 19th and 27th of April; 5th and 17th of May; and 23d of June. The liquid evacuated became thicker and more coagulated towards the end. After the last operation on the 23d June, no further fluctuation was perceived; the little fontanel and all the sutures were closed, the great fontanel alone remaining slightly open. The child grew, and even after the third operation it had already a better appearance, and after the ninth it began to articulate certain words, and also to walk: at ten months old it ran alone, and spoke as well as children of that age usually do. At the end of June, its head measured in the greatest circumference eighteen inches and three-quarters.

On the 26th of November, 1830, the child being then two years and a half old, was alive and well, and was presented to the Society of Medicine at Berlin.—*London Medical and Physical Journal, from Graefe and Walther's Journal, des Chirurgie, &c. Bd.* 15.

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23. *Case of Hydro-Sarcocele in which there was great difficulty of Diagnosis.* By Baron Dupuytren.—A short time since a physician of the marine came to consult me for an affection of the left testicle; it had been considered as hydro-sarcocele by many gentlemen who had examined it. During infancy the left testicle did not descend into the scrotum; a tumour of a variable size appeared frequently in the course of the spermatic cord, descended more or less, sometimes even into the scrotum, and then gradually reäscending, disappeared again in the inguinal ring; it finally fixed itself out of the abdomen. The existence of hernia was undoubtedly credited, for from his childhood, he has constantly worn a truss. This fact must be attended to, as it must have exercised considerable influence on the modifications which took place later in those organs; for we may take it as a rule, that whenever the truss is not useful, it is almost always hurtful; it exercises a constant, sustained pressure, the effects of which are almost always injurious; it has sometimes caused swellings of a scirrhous nature. However, for several years the patient, whose age is now thirty-two, has ceased wearing it. A circumstance to which attention should also be directed is, that the tumour often presented very considerable variations in its size. During a voyage for a year which he had been obliged to make, it increased considerably. On his return fluctuation was perceived at the anterior and inferior part; above and behind this fluctuation, a hard body was felt. When I saw the patient for the first time, I thought, in fact, that there was a collection of fluid, but it was difficult, from the history, to decide what the hard body was which I have just mentioned; I was inclined to consider it was a swelling caused by an adherent hernia; I contented myself with advising repose, baths, and topical emollients, after which I endeavoured to reduce it, but unavailingly.

The patient, whose affairs required him to undertake another long voyage, was determined to be rid of his disease at all risks. The position was a very embarrassing one to the operator; there was, in truth, a collection of fluid, but nothing else could be ascertained. In the first place it is often very difficult to distinguish hydrocele, with a cartilaginous thickening of the tunica vaginalis, from sarcocele; but besides, it was necessary to ascertain whether the hydrocele was the only disease, or whether it were accompanied by sarcocele, swelling of the testicle, or hernia, and, if the latter, whether the hernia had or had not contracted adhesions; for one or other of these hypotheses might be true. Every kind of these complications are met with, and according to them was my conduct to be regulated. I at first intended to make an explorative puncture; but it was then requisite to determine how it should be done. The use of the trocar, innocuous and very proper in cases of simple hydrocele, would prove very dangerous if the tumour were formed by an enlarged testicle, without degenerescence, or by the presence of the intestine; either of these organs might be wounded. On the other hand, if there were sarcocele the puncture would be useless.

These considerations determined me to open it with a bistoury; an incision, about an inch long, was made in the integuments on the lower part, prolonged a little backwards, and the parts carefully divided until I came to the sac containing the liquid, which was of a bluish colour, and elastic. Having pierced it with the point of the bistoury, a liquid escaped resembling that of pure hydrocele. Being desirous of preventing its infiltration in the cellular tissue, I enlarged the incision, when the quantity which escaped amounted to about eight or ten ounces. The tumour lost only two-thirds of its volume; and we might then see very evidently that its remains, the hard body already spoken of, was the testicle itself. But in what state was it? That was an important

question to determine. Its swelling might depend on a venereal, scrofulous, or external cause. On questioning the patient, it appeared that he had only had a running for about five or six days; on the other hand, although there were a few indications of scrofula about him, they were not sufficiently marked to warrant me in concluding it to be of strumous origin; the patient had a good constitution, and had always enjoyed good health. Every thing then led us to believe that this tumefaction was the result of the compression exerted on the testicle for so many years by the truss employed to keep up this herniary tumour. Supposing it to be of venereal origin, should I stop the operation there, reünite the wound, and endeavour to obtain its resolution by anti-syphilitic measures? It may easily be conceived, that my decision in this respect would depend on the more or less positive knowledge that might be acquired relative to the state of the organ, whilst the appreciation of the circumstances just enumerated could serve us only in calculating the chances of amputation.

Having carefully examined the testicle, I found its surface very unequal; it was hard and almost indolent; this hardness was especially remarkable in the epididymis, which has acquired a very considerable size. There were therefore very good reasons to believe in the degenerescence of the greater part of the organ, and I therefore determined to remove it. But being previously desirous of ascertaining the state of the upper part of the spermatic cord, which I found to be healthy, and of the inguinal ring, I reached the latter without difficulty, and found it freely open. I could then readily conceive how the volume of the tumour had varied so considerably, as I believed to be dependent on the protrusion and spontaneous reduction of an intestine. But how was it that the tumour containing the liquid was not returned into the abdomen during the efforts made in such a state of the ring? This was to be explained by the appearance of the epididymis, which was placed against the opening of the ring, and completely closed it up. It is known that in dogs a fold of the peritoneum, placed there like a sucker, prevents the return of an injection into the tunica vaginalis. In this patient, this anormal condition of the epididymis performed the natural function of the peritoneum in dogs.

In consequence of this particular condition of the ring, the operation might be followed by two accidents equally unpleasant. On the one hand, a portion of intestine might be protruded, and fix itself in the wound, as sometimes happens in the operation for strangulated hernia; on the other hand, if hæmorrhage were to supervene, the blood, effusing itself into the peritoneum, would cause violent inflammation of that membrane. To prevent this the vessels of the cord were tied with great care, as were also the vessels of the integuments.

Let me now recapitulate the circumstances of this interesting case. The tumour consisted of a collection of fluid, the abnormal size of the testicle, and, accidentally, by an intestinal hernia. This collection of fluid, in all about eight or ten ounces, was the product of the morbid secretion of the tunica vaginalis, and constituted a real hydrocele. Although the inguinal ring was widely open, the communication between the tunica vaginalis and the cavity of the peritoneum not being free, which was dependent on a particular disposition of the lower part of this canal, it had not been possible to reduce the sac containing the liquid. In regard to the determination which I formed of removing the testicle, I believe it was the wisest. The operation, it is true, was painful, long, and difficult; but that is nothing to be compared with the accidents which might occur from the ulterior progress of the disease, or from any other operation. However, the pathological examination of the testicle itself will decide whether I have acted right or wrong. It has more than three times its natural size; divided with a bistoury, it shows carcinomatous appearances of the first degree, that is, without degeneration or ramollissement. This is a happy circumstance, as it affords a greater chance for the ultimate cure of the patient. The epididymis, which is at least four times its natural size, is in the same state. The general constitution of the individual, the integrity of the cord, and the presumed

nature of the cause of this affection, lead me to suppose that the cure will be radical.—*London Medical and Surgical Journal, July*, 1832.

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24. *On the Employment of Force for the Reduction of Hernia.*—There is reason to believe that some practitioners are not sufficiently alive to the danger of employing force for the reduction of hernia—we would specially urge upon such, the following case of strangulated entero-epiplocele, in which the intestine burst by the taxis, with remarks on the subject. We extract them from the interesting volume of "Clinical Reports of the Surgical Practice of the Glasgow Royal Infirmary, by JOHN MACFARLANE, M. D."

"J. P. æt. 39, admitted 19th February, 1827, at 7 P. M. He had been subject, for twenty years, to a reducible inguinal rupture of the left side; and, during the last two years, a small portion of it remained irreducible, and prevented him from wearing a truss. The symptoms of strangulation had existed for ten hours; and during a considerable part of that time, a surgeon had made powerful and continued efforts to return the displaced parts. These produced at first a good deal of pain in the tumour; which, however, along with the vomiting, ceased for several hours, after he felt as if something had been pushed into the abdomen.

"A consultation was immediately called, when, after one of my colleagues had employed the taxis rather forcibly for about ten minutes, it was agreed to apply cold to the tumour, and attempt to evacuate the bowels by a colocynth enema. I had not an opportunity of seeing this patient for more than an hour after. The tumour was then about the size of the fist—had a pyriform shape, an irregular surface, and was rather firm and doughy anteriorly, but smooth and elastic posteriorly—the outer part being apparently omentum, behind which a fold of intestine was probably situated. The lower part of the scrotum was as large as a child's head, the swelling being chiefly confined to the left side. It was tense, smooth, and of a livid colour. The integuments were considerably thickened; and they crackled under the fingers, when firm pressure was applied, similar to what is observed from the effusion of fibrine around a sprained joint. There was also obscure fluctuation, apparently from a collection of fluid in the cavity of the scrotum. These appearances evidently depended on the effusion of blood, both into the integuments and the interior of the scrotum, which was to be attributed to the forcible pressure employed previous to his admission. His pulse was one hundred in the minute, the respiration slightly hurried, and the bowels obstructed; but there was no anxiety of countenance, and only slight pain in the belly; the vomiting had ceased, and, altogether, the symptoms were so mild that an operation was not immediately called for; yet it will be afterwards seen, that before this period the injury was done to the bowel which led to a fatal result.

"From the too forcible endeavours previously made to reduce the hernia, and from the great swelling of the scrotum, further force could not be directly or usefully applied. I considered it, therefore, highly improper to renew the taxis, which could only tend to an increase of the local injury, and an aggravation of all the symptoms. At 1 A. M. I found him much worse; no alvine evacuation had been procured; the abdominal pain was acute and diffused; he vomited every ten minutes; his pulse was 140, small and sharp; his breathing hurried, and his countenance sunk and anxious. The scrotum was now as large as a man's head, the purple discoloration having extended over its whole surface, along the perinæum to the anus, and over the right groin, in the direction of Poupart's ligament, to near the anterior spine of the ilium; the only unaffected part being about an inch of the integuments over the neck of the hernial tumour. It was nearly 4 o'clock before I could obtain the attendance of one of my colleagues, to sanction an operation and assist in its performance.

"An incision, two and a half inches in length, was made over the neck of the tumour. When the sac was opened, fully a pound and a half of dark-coloured blood escaped; a considerable quantity of which was pressed up from the de-

pending part of the scrotum. The hernial tumour consisted of a large piece of omentum, which was covered with coagulated blood, and of nearly two feet of intestine. The omentum was contused and lacerated, and the protruded gut, which was afterwards found to be the ileon, was almost wholly separated from the mesentery. It contained several rents, which passed in a longitudinal direction; and into each of these openings two or three fingers could be introduced. There had been no escape of feculent matter, but the gut was flaccid, and of a deep purple colour; the discoloration depending not on gangrene, but on the extravasation of blood into the cavity of the bowel, and between its coats.

"Two strictures, about an inch separate, one at the outer, and the other at the inner ring, were divided. I then attempted to return the uninjured parts of the bowel into the cavity of the abdomen; but after several attempts, this was found impracticable. The impediment did not arise from the smallness of the hernial aperture, or from the presence of adhesions; but in consequence of the empty and relaxed state of the bowel, and the great distention of the parts within the abdomen, I found that, although a small portion was pushed up before the finger, it was impossible to prevent it from being instantly reprotruded.* From the dreadful condition of the parts in this unfortunate patient, I had no alternative, but either to allow the bowel to remain in the sac, covering it with a poultice or other emollient application, or to excise it. Had the patient survived the effects of the disease and operation, I have no doubt, from the great injury which the bowel had sustained, and from the extensive destruction of its mesenteric attachments, that it would soon have become gangrenous, which termination would probably have been accelerated by the constant irritation to which so large a piece of intestine must have been exposed in an open wound. The only prospect of benefit from treatment, seemed to consist in procuring, as speedily as possible, a free feculent discharge, through an artificial anus; and as this could be effectually obtained only by dividing the gut as it emerged from the inguinal canal, I proceeded to excise the bowel; an operation, it must be acknowledged, of the most formidable kind, and only warrantable under the desperate circumstances I have attempted to describe.

"From the vascular state of the small portion of the mesentery attached to the bowel, I found it necessary to pass a ligature around it to prevent hæmorrhage; the gut was then divided in two places, and removed. Both ends of the bowel were secured in the wound; they did not collapse, but retained their natural calibre from thickening of the coats by previous inflammation. A piece of omentum, nearly the size of the fist, was also removed; after which, two stitches were inserted into the lower half of the wound, and simple dressing applied.

"The patient bore this painful operation with remarkable firmness; but when it was finished, he appeared much exhausted, and his pulse was rapid and tremulous. In order to procure alvine evacuations, he was ordered a compound colocynth pill every third hour, and an injection through the upper end of the divided bowel. No feculent discharge was procured; his strength decreased rapidly; he vomited almost incessantly; his belly became tympanitic; and he died at 11 o'clock, about seven hours after the operation.

"It is impossible to furnish a more useful or impressive commentary on the danger of employing force in the reduction of a hernia, than by the case now detailed. The disease was of twenty years standing; the intestine was free, although the omentum was adhering to the sac; the inguinal ring was large; and every thing was in the most favourable state for the successful use of the taxis; nevertheless, it was productive, and that in the hands of a well-informed surgeon, of the most disastrous consequences; the omentum, intestine and mesentery were torn, and an immense effusion of blood produced.

* "Boyer gives a case which occurred to Petit. Although the stricture was divided, and the gut found to be free of adhesions, it could not be returned. He was advised to cut off the part, but he allowed it to remain in the wound, and covered it with pledgets of linen; the greater part of it returned spontaneously into the abdomen, the wound healed, and a cure was accomplished."—*Traite des Malad. Chir.* Tom. viii. p. 126.

"Few surgeons will be inclined to deny the propriety of employing the taxis in the reduction of a strangulated hernia; but there exists great difference of opinion as to the cases in which it may be advantageously had recourse to, the extent to which it should be carried, and the force we are warranted in employing, before an operation is determined on. I must object, in the first place, to the indiscriminate use of force in every case, without properly regarding the state of the tumour, the urgency of the symptoms, or the duration of the disease. It must indeed be obvious, that if the strangulation is of long continuance, and the hernia highly inflamed, the taxis, if tried at all, must be employed for a short time only, and with the greatest caution, otherwise all the symptoms will be materially aggravated, and destructive consequences produced. That such consequences have resulted from even a moderate use of force, I have had repeated opportunities of observing; and I feel satisfied that, in many similar cases, the safest practice will be found to consist in the immediate performance of the operation. It is this promptitude in the use of the knife, and a more gentle employment of the taxis, which render the operations of the continental surgeons more generally successful than are those of the British. It is impossible to give any correct directions as to the quantum of force to be employed in the reduction of these tumours; but, if moderate and steady pressure does not succeed, it would be in the highest degree dangerous and reprehensible, were we to adopt the rude, powerful, and unscientific efforts, which some recommend and practise. It is not by force, but by tact, that we shall most generally succeed in the replacement of a hernia. I have reduced many hernial tumours in a state of strangulation, by cautious and steady manipulation, proper position, &c.; but I have never employed much force, and, I hope, I shall never be tempted to increase it.

"It must be acknowledged, however, that, in the hands of my friend, Mr. M'Leod, the taxis has been eminently successful; and, I have reason to believe, that, since the publication of his paper on this subject, in No. XII. of the Glasgow Medical Journal, the practice has, on the faith of his testimony, been tried by a good many surgeons in this neighbourhood. That this treatment has been adopted, without any bad consequences resulting from it, I am prepared to admit. The coats of a healthy intestine are, from their toughness and elasticity, capable of resisting a good deal of force, when it is cautiously and steadily applied; but it requires no stretch of imagination to suppose that they may give way, and be torn under violent or undue pressure. This unfortunate result may attend the manual efforts of any surgeon, however deficient he may be in physical power; but the danger is mightily increased, when we find those members of our profession, distinguished for their muscular power, making every effort to reduce a strangulated bowel, especially when aided by two or three able-bodied assistants. Can any rupture occur, for the replacement of which such combined and concentrated efforts are at all justifiable? or is it for a moment to be supposed, that we can, while thus assisted, regulate so safely and correctly, as circumstances may demand, the exact force requisite for returning the displaced parts?

"Sir A. Cooper has met with several cases, in which the intestine was ruptured by violent efforts at reduction.* Pelletan has frequently discovered, from the same cause, clots of blood in the sac, with an ecchymosed state of the intestine and omentum.† Mr. Dewar, of Dunfermline, details a case in which, on opening the sac, feculent fluid was discharged through a ragged opening in the gut. The patient was a female, and the hernia crural. The injury was produced by a surgeon, who opposed an operation, but had 'patiently pressed the rupture' for some time.‡ I have examined the preparation of a burst intestine, in the museum belonging to the Portland Street Medical School. The injury was produced by a surgeon in town, when attempting to return the

* Lectures by Tyrrell, vol. iii. p. 27.
† Clinique Chirurgie. tom. iii. p. 381.
‡ Edinburgh Medical and Surgical Journal, No. 96.

bowel which was strangulated. I was present in autumn last, when two respectable surgeons of this place were attempting to reduce a large scrotal rupture, which had been in a state of strangulation for about four hours. While the patient lay in a hot bath, the neck of the tumour was managed by the one surgeon, while the other grasped the lower part of it. After continued and rather powerful efforts, the hernia was reduced; but the patient died in a few hours. On dissection, the intestine was found ruptured, and the peritoneum, in several places, peeled from its surface.

"It sometimes happens in old herniæ, that the gut, from frequent protrusion, and the pressure to which it is subjected by the opening in the abdominal parietes, becomes diseased. Whether this morbid change consists in a thickening, or attenuation of the bowel, it is generally accompanied by a softening of all the textures of that portion of the tube implicated in the hernia. In such a combination, it is evident that the taxis, unless used with the utmost caution, will probably produce fatal effects; and, as we have no means of ascertaining the existence of this disorganization during the patient's life, it should form an additional reason against the employment of force in the reduction of the tumour.

"In May, 1827, when walking along one of the public streets of this city, I was requested by a surgeon to accompany him into his shop, and examine a poor woman who had fainted a few minutes after the reduction of a strangulated crural hernia on the right side, which had annoyed her for more than twenty years. The tumour had been in a state of strangulation for about eight hours; but the symptoms were not urgent. After a gentle use of the taxis for five minutes, the hernia went up with the usual noise, and was almost immediately followed by syncope. On examination, I found her skin covered with cold perspiration; the pulse rapid and feeble; and she complained of acute pain in the right inguinal region. She was immediately carried home, but continued to get worse. The pain became diffused; vomiting and hiccup occurred; the belly was tympanitic; and, without reaction taking place, she died in less than seven hours. I was present at the dissection, and found a lacerated opening in the middle of the ileon, which could admit three fingers. The intestine was softened and thickened, but not in a state of gangrene; and through this preternatural opening, the contents of the alimentary canal had escaped and excited peritonitis."

MIDWIFERY.

25. *Observations on the spontaneous Amputation of the Limbs of the Fœtus in Utero, with an Attempt to explain the occasional Cause of its Production.* By W. F. Montgomery, M. D., M. R. I. A., Professor of Midwifery to the King and Queen's College of Physicians in Ireland.—Several of the writers who have expressly treated of the pathology of the fœtus, in their enumeration of the accidents to which it is liable during its uterine existence, mention the fact of the occasional separation of portions of the limbs: and especially Desormeaux, in his elaborate and able article on the "œuf humain" speaks of it as an instance of spontaneous amputation, which he attributes to the effect of inflammation and gangrene.

But none of these authors appears to have witnessed or examined any case of the kind themselves, nor can I find a satisfactory reference to any such case in any author within my reach, except those which are now to be noticed.

In the London Medical and Physical Journal, vol. liv. p. 38, Mr. Watkinson relates the following case. Being called to a lady, aged twenty, in her first labour, which was natural and easy; when the child was expelled, "he discovered that the left foot had been amputated a little above the ankle, and the part nearly, but not quite healed."

The child was alive, and gasped for twenty minutes, when it expired. The

mother had only gone seven months. On examination after the birth, the foot was found in the vagina, and it also was nearly healed. There did not appear to have been any hæmorrhage from the limb; the separated foot was much smaller than the other, which was rather turned inward; it showed no mark of putrefaction, but appeared to be in a state of perfect preservation. The mother said she had not been frightened, nor had any unpleasant circumstances occurred in her family to give her the least uneasiness; her circumstances were sufficiently easy to render unnecessary any over-exertion on her part.

The parts here described were examined by the editors of the Journal, and a sketch of them is subjoined to the description.

M. Chaussier examined two cases in which separation of a part of the forearm had taken place before birth; and in a third case of the same kind, he found the separated portion of the arm and the hand lying in the membranes, and, as in Mr. Watkinson's case, the stump was healed.

Chaussier also attributes the accident to gangrene, as the cause which would most obviously account for its production; but it does not appear from his account, that there were present any of the pathological evidences of that condition; and indeed, as a general explanation, this appears hardly admissible when we recollect that, in the first case related, the child was born alive, and neither the stump nor the part amputated showed any symptom of disorganization or disease, nor was the latter even discoloured.

Without pretending to discuss the different causes likely or unlikely to produce so remarkable a change, I shall proceed at once to describe the case which occurred to myself, and which appears to me to offer one explanation at least of the phenomenon under consideration.

About three years since, I was suddenly called on to see a patient who was miscarrying in the fifth month, with violent hæmorrhage. On examination, I found the fœtus partly expelled from the uterus, and lying in the vagina, from whence I readily removed it by slight pressure with my finger; the cord was broken off, at about an inch and a half from the umbilicus; the secundines were retained for three or four days, without any return of hæmorrhage, and were then expelled whilst the patient was evacuating the bowels. She recovered well.

Observing the unusual figure of the head, I laid by the fœtus for examination, and having placed it in clean water for the purpose, I was greatly struck with the appearances it presented.

The shape of the head was altogether deformed and monstrous, and the brain, which at the left side was covered only by the common integument towered upwards like a helmet over the head; but the circumstance which most forcibly attracted my attention was the appearance of distinct ligaments on the limbs; and examining closely, I found them in the following condition:—

There were distinct threads of, I presume, organized lymph passing from both hands to the legs; at one end these threads, which very much resembled the kind of thread called ardis, had formed a complete ligature round the middle of each hand, causing a distinct depression where it passed, the part of the hand below it being almost completely undeveloped; from the hands these threads descended, at both sides towards the legs, which were crossed, and surrounding them in this position, just above the ankles, so tightly, that fully two-thirds of their whole thickness were thereby divided, wit! ut, however, any breach of the skin having taken place, nor was there the slightest appearance of disorganization or discoloration of any of the parts, but as were the hands, the feet also were imperfectly formed, totally undeveloped, and of course misshapen. These circumstances are very accurately represented in the drawing executed by my zealous and accomplished pupil, Mr. J. Bullar, and the fœtus itself is preserved among the preparations in my museum. The mother was about twenty-five years of age, and at the time labouring under fever, but had been previously in perfectly good health, and had not met with any accident or circumstances of either bodily injury or mental agitation.

From the condition of the limbs thus produced, and the impossibility of the

parts below the ligatures continuing their growth under such circumstances, it seems exceedingly probable that had the child continued to live and grow, the parts of the legs below the ligatures would have been separated, and thus undergone spontaneous amputation. The formation of these threads, and particularly their application so as to stricture the limbs, are circumstances in explanation of which I do not feel prepared even to hazard a conjecture, nor can I find in the authors who have treated of such subjects more than a mere allusion in some of them to the fact, that the fœtal limbs are occasionally separated, and by all it seems taken for granted that mortification is the agent of the change.

The only passage which I can find apparently relating to the state of the parts just now described, is in the Elementa Physiologiæ of Haller, t. 8, p. 135; it is as follows: "Huc faciunt alius fetus, cui artus retracti, compressi, ligamenta stricta, &c.," the last phenomenon he quotes from one of Rœderer's works, which I regret I cannot find in any of our libraries, and am therefore unable to ascertain how far it might bear upon or illustrate the fact before us. It does not appear from any passage in his writings, that Haller was himself aware of any such case from personal observation. He gives, indeed, a long list of extraordinary mutilations in the fœtus, attributed by authors to the effects of mental emotions in the mother, or of accidents sustained by her; but he immediately pronounces most of them to be "adeo fabulosa ut fidem auferant," and he obviously considers such cases as the result of imperfect development or of malformation, and not of separation or removal of the parts already formed, objecting to the authors who have furnished such descriptions, that they cannot even quote one instance in which "manus truncata, aliusve artus in membranis fetus seorsim a corpore repertus sit;" two such instances at least have, in the foregoing remarks, been laid before the reader, and with regard to the case which I have added, I will only venture to say, that it appears to me to afford at least one solution of so mysterious an occurrence, and should it appear, as of course it must, that the explanation thus supplied is so far unsatisfactory, that it is itself the result of a process equally inexplicable, it should be recollected, that very many indeed, if not all the physiological and pathological results which we witness, are, as to the mode of their production, enveloped in a similar cloud of obscurity: I think the fact which I have here added, leads us at least one link further in the chain of causes and effects, and if so, even though the advance should be but of one step on the road to knowledge—"Est quodam prodire tenus si non datur ultra."—*Dublin Journal of Medical and Chemical Science.*

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26. *Case of Contraction of the Vagina.* By DAVIS D. DAVIS, M. D.—The subject of this case was a lady, thirty-nine years of age, whose spine was considerably distorted by an injury which she accidentally sustained during her infancy. When she had been in labour only for two or three hours, she was advised by her monthly nurse, who probably anticipated more than ordinary difficulty, to send for her medical attendant. On the author's arrival, he found the orifice of the uterus very amply dilated, NEARLY OBLITERATED, and the fœtal head presenting favourably. In ascertaining these facts, however, he encountered some difficulty in carrying his finger through the middle of the vagina, where he found it contracted into a very narrow diameter, and presenting such a feel as it might have been expected to present, if it had been bound by a ligature coiled round it on the outside. It moreover felt firm, thick, and rigid. The mother of the patient being in attendance, reported that her daughter had always menstruated regularly and well, and that she had never been the subject of any known disorder of her genital organs. The affected part gave no evidence of its ever having been the subject of cicatrization. Time and patience, therefore, presented themselves as the principal remedies. The cavity of the pelvis was sufficiently ample. The labour pains became very active in the course even of a few hours, and ultimately exceedingly urgent, accompanied by a tempestuous excitement of the heart and arteries. The patient was bled

freely and repeatedly, and the hand was as much used to promote dilatation as was deemed consistent with the soundness and safety of the part to be dilated. She was delivered of a still-born child in about FIFTY HOURS after the commencement of the labour. She recovered slowly but perfectly. She sustained no retention of urine, nor purulent discharges during her convalescence. The loss of an heir to a good property, as it might well be supposed, was not a little regretted. But the disappointment was forgotten, and the loss doubly repaired by the subsequent birth of two living children, both sons.

In some cases of contracted vaginæ a considerable, and even sudden dilatation occurs during labour.—*Obstetric Medicine.*

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27. *Rupture of the Uterus, without Laceration of the Peritoneal Covering.*—The *London Medical and Surgical Journal*, for 7th July, 1832, contains an interesting case of this description, by THOMAS RADFORD, Esq. Surgeon to the Manchester Lying-in Hospital. The subject of the case, (Hannah Speed,) was thirty-nine years of age, rather tall, and very thin, of a swarthy complexion, occupied as a clear-starcher, of extremely industrious habits, and pregnant of the ninth child. Her health during pregnancy had been tolerably good, with the exception of slight stomach complaints, which were, most probably, produced by the uneasiness of her mind as to the certainty of the fatal event of her expected labour.

Mrs. Upton, midwife, was summoned to attend her at 11 P. M., January 28th, 1831, and was told that the liq. amnii had escaped. Upon making an examination per vaginam, she could not discover any dilatation of the os uteri; she therefore left her, desiring to be sent for again, as soon as the pains came on. The day following, at 4 P. M., Mrs. Upton called, (not having received any message,) and the report made was, that the patient was much the same, but the less water was dribbling; no examination was made. At 9 P. M. of the same day, her attendance was again requested. On her arrival she found that the pains were apparently strong, but considered them as more the result of voluntary effort than uterine contraction; and this opinion was corroborated by the unchanged condition of the os uteri. As her belly was extremely pendulous, Mrs. U. placed the patient in the horizontal position, enjoining her to avoid all voluntary effort. Her skin, during the whole progress of her labour, was rather cold; but the midwife judiciously applied hot bricks to her feet, hot napkins to the belly, and gave her warm diluents to drink. Notwithstanding the injunction laid upon the patient, as to the necessity of preserving the horizontal position, she would get out of bed and bear her pains upon her knees, from which position suddenly starting she threw herself upon the bed; this was frequently repeated. At a quarter before 11 o'clock Mrs. U. again made a vaginal examination, when she found the os uteri dilating, and the head entering the superior aperture of the pelvis. The husband of the patient became anxious to have another opinion, and a message was sent to my house. My pupil, Mr. Bryden, went down to see her, and upon his return reported, that every circumstance connected with the labour were favourable, and that he had no doubts as to the propitious termination of the case. About half-past twelve, she was seized with vomiting, which was accompanied with great coldness of the skin. The midwife requested her to take a little brandy and water, which materially relieved her. After a short time she appeared worse; her countenance became pallid, her breathing was slightly hurried, and frequently interrupted by deep sighs; her pains, (which until this period, one o'clock, had continued,) now subsided. Under these circumstances the husband was dispatched for me; and during his absence she suddenly rose from the bed, and stood on the floor. She now became faint, sighed and moaned, but was supported by the midwife, who laid her upon the bed, where she immediately expired. On my arrival I found the event as just stated, and on making inquiry as to her complaints during the progress of labour, was informed, that she had moaned much, but had never uttered any sudden exclamation or shriek. I passed my finger into the vagina,

and clearly perceived the head of the child, which had partially entered the brim of the pelvis; and I found the os uteri not more dilated than the size of a dollar. The account received from the midwife was, that no blood had been discharged; and this was corroborated by my vaginal examination, the finger not being tinged with the colour of that fluid. I placed my hand upon the abdomen, and was much surprised to feel two tumours, running parallel with each other, a groove or depression evidently existing between the two, and yet the sensation communicated to the hand was, that they were connected together.

Sectio cadaveris.—The body was examined twenty-one hours after death, in the presence of Mr. Dick, my pupil Mr. Bryden, and Mr. Bird. The general surface presented an exsanguineous character, similar to what is observed as the result of excessive uterine hæmorrhage. On opening the abdomen the peritoneum appeared perfectly free from disease, nor was any fluid discovered in its cavity. The peculiar feeling presented to the hand, upon making an abdominal examination, (referred to in a former part of the paper,) was now fully explained. The uterus, which was very large, formed one segment of the tumour, (viz. the left,) and the child's body, covered by the peritoneum, the other. Upon making a very careful examination of these parts, not the smallest laceration was discoverable in any part of the peritoneal covering; an incision was made through this membrane, which exposed the body of the child. It also brought into view a longitudinal laceration of the cervix, and part of the body of the womb, the remaining portion of this side of the organ being uninjured. The child was then removed, and the head, which had partially entered the brim of the pelvis, was discovered to be hydrocephalic, and of very considerable size.

The uterus, as already stated, was not much contracted; its parietes were softer than I had ever before witnessed in cases of laceration. The edges of the wound were ragged, but no appearance of bruise or tendency to gangrene was discovered. There was only a small collection of coagulated blood found in the cavity of the womb, amounting to three or four ounces; but under the peritoneum, and anterior to the body of the child there was a diffused clot, thicker in some parts than in others, according as it was situated on a prominent or hollow part of the fœtus. It, in quantity, would most probably amount to twelve ounces.

The lowest portion of the cervix, and os uteri, were not implicated in the rent: the placenta was situated on the left side of the uterus, to which it was completely adherent. The pelvis, on examination, was found of standard dimensions. The bladder was empty, but was perfectly entire.

Mr. Radford has also met with another case of extensive laceration of the muscular structure of the uterus, not involving the peritoneum—it proved fatal sixteen hours after the laceration. "In contemplating," says Mr. R. "the frequent fatality of cases of laceration of the womb, we are led to inquire whether there are no symptoms which show themselves, as universal precursors of this most dreadful catastrophe? and if there are, are we possessed of the means of prevention? The answer to this is, that at present we are not in possession of that knowledge which would warrant us in adopting measures requisite to accomplish this object. If we were to act upon our limited knowledge of the preliminary symptoms, the catalogue of mortality would increase more rapidly than if the result were left to the disposal of nature.

"In order to possess the means of averting this dreadful accident, it behooves every member of our profession to come forward and detail all the cases, whether successful or unsuccessful, which have or may occur to him; thus, ultimately, facts sufficiently numerous would be furnished, whence deductions might be made, and rules of practice formed.

"I was requested by Mr. Robertson to visit a patient, on whom he was in attendance, and who was suffering from protracted labour, arising from distortion. During our preparations for her delivery, she suddenly exclaimed, 'Oh! my belly, the cramp in my belly!' I immediately made an examination, and de-

tected a laceration extending partially through the substance of the womb. This circumstance I pointed out to Mr. Robertson, and he fully corroborated the fact on making an examination. We effected an immediate delivery with the perforator and craniotomy forceps, and fortunately the woman recovered. We were induced to accomplish the delivery more expeditiously, in this case, than we might have considered necessary, if our attention had not been awakened by her sudden exclamations.

"It will be quite obvious to the reader, from the facts of the case of Hannah Speed, that there will be no great difficulty to attribute the result to its proper causes. The pendulous state of the abdomen, and consequently the altered axis of the womb; the hydrocephalic enlargement of the head; the early evacuation of the liquor amnii; the position of the woman, who in kneeling had the trunk bent forwards during the action of the womb; and shall I add, a softening of the uterine structure?

"The perforation of the fœtal head, (which was discovered only by the *post mortem* examination to be hydrocephalic,) might, in all probability, have led to a more fortunate issue; but, during the life of the patient, this fact was not known. Speaking of the hydrocephalic head, it may be proper to state, that its existence is not so easily ascertained as some writers would lead their readers to believe; three cases of this description have come under my observation, and yet the indications which are stated to characterize this condition of the head were absent in all.

"I should have extracted the child, by an incision through the abdominal parietes, if I had been with the patient at the time of her death; but my absence, and other circumstances, induced me to defer the investigation until a more favourable period."

CHOLERA.

28. *Historical Examination of the Epidemic Cholera of Paris; Account of the different Modes of Treatment employed against different Forms and Periods of the Disease; and Estimate of the results of these Methods.*—The numerous materials collected from all parts of Paris, will, doubtless, furnish the means of tracing a general history of the epidemic cholera; and while we wait for the periods when we may undertake this task, we shall publish, in the meantime, a series of facts by which it may be facilitated. We begin with the

Hôtel-Dieu.—The sanitary state of this large hospital always furnishes the exact standard of what is going on in the rest of the city. Its central position and the neighbourhood of several populous districts, caused patients to flock thither before the prevalent disease was heard of at the other establishments.

Already, especially under the care of M. Petit, it had been observed that several persons were attacked with profuse diarrhœa and serous vomiting; and one or two cases of sporadic cholera had been observed, which had yielded to simple rational treatment, when, on the 26th of March, a woman with the same symptoms, though in a more advanced stage, entered the St. Paul Ward. The existence of cholera was admitted, without, however, regarding the case as of the epidemic species. The woman died four or five days after.

On the 27th of March, 4 new cases, 2 men and 2 women, with the symptoms ascribed to Indian cholera, were brought in the evening. Assistance was promptly given; but a man and a woman died next day, and inspection left no doubt on the nature of the disorder. The remedies were external revellents and opiates; but reäction did not take place, and death speedily ensued. These cases were carefully recorded by M. Montault, pupil of M. Petit.

On the 28th, 9 men, labouring under intense cholera, were admitted. One died the same day, after being a few hours in the ward; 7 more died next day, and 1 only recovered. A women entered the Hôtel-Dieu the same day, about

four in the afternoon, and expired before midnight. On opening a vein, no blood could be obtained; the exhibition of punch produced no reäction; and, to use the language of M. Magendie, by whom she was treated, she was a *cadaverized* case,—a true type of that asphyxial variety afterwards met with. These first demonstrations indicated the severity of the disease; and two wards were assigned for the admission of patients that might forthwith be expected. This apprehension was very soon confirmed; and next day, the 29th of March, 23 new cases, 14 men and 9 females, were lying in the St. Martine and St. Monica Wards, under the care of MM. Magendie, Honoré, and Bally.

Of these 14 men, 8 died the same day, and the remaining 6 the day after. One of the 9 women died the same day. Most of these patients, it may be remarked, came from the district of the Hotel de Ville, from the street of La Mortellerie, from the city; some belonged to districts less insalubrious, as the Gate of St. Denis, the street of Orleans St. Honoré, &c. Dissemination was manifest, and consequently it was necessary to admit some other influence beside that which is concentrated in a confined and isolated locality.

On the 30th, 40 new cases were received; 10 died the same day, and almost all the rest the ensuing day. The same day, (30th,) at midnight, 78 cholera patients were lying in the Hôtel-Dieu; and on the evening the following day, only 16 were in life, and expired in the course of the subsequent days. At this period, it must be observed, of 27 females only 19 died, while among 51 men there were 43 deaths. This alarming mortality depended not merely, as was asserted, on the uncertainty of the treatment; for most of the patients brought to the Hôtel-Dieu presented the symptoms of the most virulent form of the disease. In vain did we attempt to produce reäction, and to warm them by every means suggested by reason and experience; the violet tint of the countenance and the limbs continued; the voice was irrecoverably gone; the breathing slow and deep; the eye dull, and the eyelids half open. The serous discharges continued to exhaust the patient, who was quickly cut off amidst acute suffering from the cramps, and unabated præcordial anguish.

On the 31st, 50 new cases, 30 male and 20 female, were admitted; and it is remarkable that the proportion of admissions and mortality nearly observed this standard throughout. During these five days, therefore, the progress of the epidemic was rapid, and its commencement indicated a high degree of severity, and a wide extent of comprehension. Hitherto all the individuals attacked belonged to the working class, and they were generally middle-aged men, exhausted by labour and privations, badly fed and clothed, residing in unhealthy districts, neglecting every species of cleanliness, and guilty of frequent errors of diet. The majority had suffered before the first assault of the disease a diarrhœa of several days' duration, which had been neglected, or rather treated by wine, spirits, and other *stimuli*, resorted to by the common people in such cases.

The patients accommodated in the two wards already mentioned, remained only two days under the care of the physicians specified. All the heads of the faculty being assembled, resolved that a certain number of beds should be allotted to each; and in consequence thereof nine physicians and three surgeons divided the 168 beds contained in the two wards, making to each 14, or 7 men and 7 women. These physicians and surgeons were MM. Petit, Recamier, Gueneau de Mussy, Husson, Magendie, Honoré, Bally, Gendrin, Caillard, Dupuytren, Breschet, Sanson.

Each head of the service had his internal pupil and his externals. The number of hospital attendants was augmented, but it was soon discovered that these measures, instead of alleviating and accelerating the duty, deranged its regularity. Very varied prescriptions, very different methods, measures executed at the same time, or at different hours, produced a degree of confusion, which caused much suffering to the patients, and which the zeal and intelligence of the most able assistants could not prevent. On the 3d of April, after which it became imperative to distribute the patients in all the wards situate on the left

bank of the Seine, 388 patients had been treated in the wards of St. Martine and St. Monica, and next day 281 deaths were to be divided among the 12 physicians specified above. Some days after, one-half at least of the residual 107 had expired, and 3 score only quitted the hospital recovered.

We shall afterwards consider the therapeutic methods observed; at present we must advert to the pathological principles on which the treatment was founded, and which were sought in the comparison of the symptoms with the necroscopic appearances.

The first inspections, performed with the minutest care, showed that the brain, the lungs, the liver, the spleen, and the other parenchymatous organs were not the seat of any arterial or venous bloody congestion, that there was not even cadaverous turgescence or mechanical *stasis*, and already the modification undergone by the blood was perceptible. Of this blood the chambers of the heart and the large vessels contained a certain quantity, though less than usual; but it was not in mass; there was no fibrinous clots in the aorta or pulmonary veins; it was blacker than the ordinary venous blood; its consistence was that of broken down currant-jelly, that is, a species of pulp a little diffluent, but without trace of separation of the serum from the fibrine. The inner membrane of the vessels offered nothing indicating a morbid condition, and all the branches of the abdominal portal vein were empty.

On the other hand, the proper digestive apparatus, viz. the stomach and intestines, presented evident signs of active congestion. The gastro-enteric mucous membrane was injected of a rose colour, punctulated and sprinkled with arborescence of a bright red. There were many prominent patches of very distinct isolated follicles; and near the end of the *ileum* were all the anatomical characters of mucous inflammation of that portion of intestine. The whole tract of the intestine contained a large quantity of serous or sero-mucous fluid, tinged sometimes red, occasionally yellow, but most frequently turbid, whitish, depositing a flocculent pulverulent matter, as is done by a strong decoction of rice or an imperfectly strained emulsion. The large intestine appeared not unhealthy, and its contained fluid belonged to the *ileum*. The gall-bladder, without being distended, contained a blackish viscid fluid. The urinary bladder was uniformly empty, although the whole urinary apparatus betrayed no appreciable lesion. *Lastly*, the whole body was extremely rigid. The muscles formed through the skin bold reliefs, as in the most violent contractions. The fingers and toes were incurvated; the nails bluish; the countenance, pinched and contracted, retained the expression of suffering; and the eyes half-covered by the eyelids presented the lustreless stare already observed in life.

The cerebro-spinal apparatus was the object of researches still more strict if possible. The brain proper was firm, punctulated with black blood. The gray substance rose-coloured, but all natural. Neither the *cerebellum*, nor the annular protuberance, nor the spinal bulb, bore any trace of lesion. The serous fluid of the ventricles, and of the ex-serous cavity of the spinal cord showed nothing remarkable. The same may be said of the chief nervous trunks of the extremities.

Lastly, several great sympathetics were dissected in their entire course, and convincing proof was obtained that they presented no visible lesion.

These researches were made without preconceived idea, and with the laudable intention of forming an exact estimate of the organic lesions of the individuals who became victims to *cholera*. It was thought that proof was given of *active congestion* of the digestive apparatus,—congestion, by means of which was explained the enormous sero-mucous secretion forming the basis of the evacuations exhausting so rapidly the choleric subjects. This bloody concentration was believed to have the effect of speedily robbing the blood of a large proportion of its mass and constituent principles, since the residue was manifestly less than usual, and had lost the characters of healthy blood. The disturbance of innervation, in consequence of which these changes supervened, though maintained by a distinguished surgeon, is mere supposition; and not

even an incipient proof or a plausible trace could be discovered in favour of this revived opinion, which must be regarded as a mere hypothesis.

We must therefore be satisfied with regarding as uniform a very active irritation of the small intestine, or a first degree of inflammation giving rise to peculiar phenomena. From this, consequently, was deduced the first rule of treatment, the object of which was to oppose this inflammation. We shall see, nevertheless, that, notwithstanding this opinion, the treatment adopted was far from being purely antiphlogistic.

On one hand, all the patients brought to the Hôtel-Dieu, by no means presented the same symptoms; and if, on the whole, they were attacked by the same disease, it was impossible for them all to be attacked in the same degree, or for the disease to assume exactly the same forms in all cases.

The first patients brought to the hospital were in a state of deep collapse, of general cold, with the circulation almost at a pause, the large arteries alone presenting feeble oscillations. The beats of the heart were scarcely heard; and the ear, applied to the chest, perceived only a dull sound, denoting that the ventricles did not expel the little blood they contained. These patients expired speedily, whatever efforts were made to warm them; and many thus died in six, eight, ten, or twelve hours at most. With these patients the first and most urgent indication was to reëstablish the circulation, to induce reäction in the sanguiferous and nervous system, and put a stop to that state of slow *asphyxia* which directly threatened life. In these circumstances, M. Magendie administered several glasses of spirituous punch, spoonfuls of hot spiced wine, frequently repeated, and of Malaga and other spirituous wines. These means were, however, very far from producing always the effect desired.

Patients, however, in whom the refrigerating period was less advanced, were also brought to the hospital; and these complained of acute pains in the epigastric region, and in that of the heart, as if the lower part of the chest was the seat of a sense of weight, which embarrassed at once the motions of the stomach and those of the heart. In these patients the pulse was more distinct than in the preceding class, the cramps of the legs were violent and frequent, agitation was extreme, and the vomitings were accompanied with intense anguish. In this form or degree of the disease, an indication for detraction of blood, either by the lancet, or by means of cupping, or by leeches, was believed to be found; and MM. Husson, Honoré, Gendrin, and others, had recourse to the antiphlogistic method with success.

Other patients appeared with an assemblage of very singular spasmodic symptoms. Cramps, occupying simultaneously or successively almost all the muscles of the trunk and extremities, appeared the leading symptom of the disorder; the patient was in incessant agitation, uttered piercing cries, rolled in his bed, and often even threw himself on the floor, without being able to obtain a moment's respite. In some, who had almost no vomiting or purging, the countenance was red and congested, the eye brilliant, the belly tense, and the urine suppressed; and, had not the precursors of the disease been almost like those observed in other cases, it might have been mistaken for another disorder. Though in these cases of spasmodic cholera it was still thought useful to draw blood, the urgency of controlling what was denominated nervous irritation was admitted; and in these circumstances, several physicians obtained good effects from the use of opium in large doses, long-continued baths, and numerous analogous means.

Lastly, some patients presented all the symptoms of *cholera* deemed inflammatory. Pain, aggravated by the slightest pressure, burning thirst, general heat, red tongue, and hard pulse; and in these circumstances the means employed were modified by the vigour of the subject and the period at which he was brought to the hospital.

Thus, some days of experience were sufficient to demonstrate this great truth, that in *cholera*, as in every other disease, the treatment, regulated by observation is, alone, good and practicable, and that it is absurd to adopt a uni-

form and general therapeutic system. Was the eruption of this formidable epidemic in Paris in 1832 requisite to furnish occasion to prove, that exclusive principles, always fallacious, are particularly so in the practice of medicine, and that the search for a specific may be abandoned with that for the philosopher's stone.

The principal indications now specified, forming the basis of some partial modes of treatment, we shall mention the more general ideas which served as the foundation of special methods. We do not allude to specifics, but to a mode of treatment with reference to etiological ideas more or less founded on observations of some isolated facts, or on analogy with other disorders, the ultimate nature of which is better understood.

Many physicians, for instance, regarded *cholera* as the result of a species of miasmatic poisoning, and on this supposition founded their treatment. The painter's colic is accompanied with symptoms similar in some points of view to those of cholera. Hence the idea of employing in the last affection the sulphate of *alumina*, sulphuric lemonade, and other remedies, which peculiarly modify the intestinal tube when under the influence of the oxides of lead. This method MM. Gendrin, Sanson, and others employed, and it must be admitted, without any success.

M. Dupuytren considering the most frequent symptom, that of the colliquative extenuating diarrhœa, as the one which most urgently demanded the attention of the practitioner, prescribed acetate of lead and the preparations of opium. He believed that these remedies, administered in large doses, would victoriously oppose the extreme determination to the small intestine, and reestablish the balance by the sole operation of their astringent and sedative properties. This theoretical view derived more or less plausibility from analogy; but it gave way under clinical experiment; and it was requisite to abandon it after some trials conducted with becoming precautions.

The therapeutic measures underwent several modifications suggested by the leading symptoms. Each physician had a peculiar method, and in this we observe great diversity, if not in substance, at least in form.

In the refrigerating period, M. Magendie gave internally diffusible stimulants; MM. Petit, Honoré, Gendrin, and several others, employed friction of the trunk and extremities with hot aromatic liquors; some physicians placed the patient in a vapour-bath; others enveloped him in woollen coverings, and conveyed under them, by means of an appropriate tube, a large supply of alcoholic vapour. Lastly, M. Recamier employed cold affusion, or at least affusion of water at 57, 58, or 59 degrees only, for one or two minutes over the whole surface; a method which produced energetic reäction, and almost instantaneously restored heat and sweat. The extremities of the patient were surrounded with hot bricks, hot smoothing-irons, bags filled with hot sand, bottles of hot water; and, in short, nothing was neglected to produce speedily the result.

At a period less advanced, when the patient, yet retaining a little heat, was suffering from vomiting and purging so profuse as to threaten immediate dissolution, means also very varied, and suggested by some peculiar systematic notions, were adopted. Thus, the physiological physicians applied leeches to the epigastrium, opened the veins of the arm, administered soothing drinks, and, in short, studied to allay the irritation of the digestive apparatus. Others, attaching less importance to these symptoms styled inflammatory, did not hesitate to employ means more active, more direct, and more likely to augment the disturbed action of the disordered organs. This revulsion, as the followers of M. Broussais termed it, brought about most happy changes. Tartrate of antimony, in the dose of 2 or 3 grains, ipecacuan, in a quantity varying from 15 to 18 grains to a scruple, and even more, was administered boldly, and with the happiest effect. In this M. Recamier imitated the Germans, who have long boasted the superiority of this substance in the treatment of dysentery, and other acute affections of the intestinal tube. The vomiting, increased at first, soon ceased, and with it the intestinal discharges; and gentle uniform warmth then

followed, the skin was covered by sweat, the cramps ceased, and tranquillity of the system was restored. These effects obtained in a great number of patients, induced almost all the other physicians to employ the same remedy; and at present ipecacuan is in frequent use in the treatment of cholera.

Under the influence of the same idea, the same physician employed the sulphate, and the carbonate of soda and of magnesia, in ordinary purgative doses. The choleric diarrhœa was by this very simple remedy very promptly controlled; and we owe to it numerous cures.

When the patient in the deepest collapse appears insensible to every stimulant, the electro-puncture has been used with some benefit; and to this M. Bally is indebted for reviving several patients in this hopeless condition. An agent still more active; namely, cauterization of the epigastrium was also employed; but M. Dupuytren, by whom it was used, has had no reason to commend it. Lastly, with the same object, several drops of ether saturated with camphor, were administered with apparent advantage by M. Recamier.

Besides the local bleeding, by means of leeches or cupping, and those practised at the arm and jugular vein by the lancet, arteriotomy was performed on a number of subjects, who, it must be confessed, appeared to derive from it no benefit. The temporal artery was opened by MM. Magendie, Recamier, Gendrin, and several others; and by this means some spoonfuls of rose-coloured blood, with impaired fluidity, trickled away as if from a venous tube. In two subjects, it was determined to open the radial artery a little above the articulation of the thumb, where it is superficial, and may be easily tied. It was then observed that this vascular trunk scarcely contained a feeble thread of blood, the motion of which was so much retarded, that the jet scarcely rose beyond the lips of the wound; the ventricular impulse was almost extinct, and, to obviate hæmorrhage, a simple compress and ordinary bandage was sufficient. The thin plastic blood scarcely reddened the two or three turns of the roller which covered the wound of the artery; when reäction began to appear, there was no hæmorrhage, properly so named; and ligature of the vessel was dispensed with as superfluous.

These facts are not new; and the surgeons of Berlin went a step further. The brachial and even the crural artery was opened; and it will scarcely be credited that a distinguished surgeon, whose name we conceal, ventured to open the carotid artery, because the other arterial trunks had furnished no blood. It is related that the latter arteries being equally deficient, the operator introduced a stylet into the aorta and left ventricle to rouse it to new contractions. Death took place on these manœuvres, although denied by one of the admirers of this chirurgical hardihood; and there was not time to see the patient sink under hæmorrhage.

Though arteriotomy is practicable in the treatment of severe *cholera*, it is probable that it ought not to be employed, because the arterial system is not the seat of the mischief. The venous blood is manifestly changed, while that of the arteries is merely deficient in quantity. If this were practicable, it would be more rational to attempt transfusion, than to deprive the system of the little stimulus left. But rational physicians, who admit as a therapeutic agent, that only which bears a relation to well-marked symptoms, will have recourse to suitable means; and we turn to those who particularly belong to this class.

We shall take a view, in the meantime, of the method employed by each of the physicians of the Hôtel-Dieu, and the results obtained in their different departments. We shall do so in reference to the peculiar circumstances presented, and which have influenced the numerical amount of the deaths and recoveries.

The first seven beds of the St. Martine Ward being under the care of M. Honoré, we shall begin with that honourable practitioner. M. Honoré distinguishing two well-marked periods in the progress of cholera, prescribed the following treatment. During the attacks, that is, when vomiting and looseness, cramps, refrigeration, and more or less *aphonia* were urgent, friction on the ex-

tremities and the præcordial region, from half hour to half hour, with flannel soaked in a mixture of two ounces of spirit of camphor, and half a drachm of tincture of cantharides; *2d*, to administer every half hour *enemata*, consisting of rice decoction, 1 pint; extract of rhatany, 2 drachms; laudanum, 40 drops, and ether, 4 drachms—the whole divided into 4 *enemata; 3d*, every half hour a spoonful of Malaga wine; *4th*, carbonated water, or sugared tea for drink; and *5th*, the anti-emetic of Dehaen, with 15 drops of laudanum, and half a drachm of the anodyne liquor of Hoffmann. If, in spite of all these means, the vomiting continues, a large blister was applied to the middle of the back. Lastly, there was administered in the night, in spoonfuls, a potion consisting of Malaga wine for its basis, and a large proportion of the syrup of *diacodium;* then revellents were applied to the feet, &c.

In the period of reäction, the treatment was regulated by the leading symptoms. Blood, for instance, was drawn from the arm, or by leeches from the epigastric or iliac regions, according as symptoms of morbid congestion appeared in different points of the digestive apparatus. M. Honoré, finally, has generalized in some degree his opinion on the general treatment of *cholera* by confining it to three indications;—to restore warmth, to oppose by all possible means the concentration which tends to the centre, and then at a subsequent period to moderate the effort of reäction which takes place in the opposite direction.

About 40 patients of both sexes were treated in the beds allotted to M. Honoré during the first seven days of the epidemic; and half of the number expired. It must be mentioned that four or five individuals at least were brought dying, and remained only one or two hours in the ward, so that to them no cure could be administered. After this period, that is, during the succeeding eight days, nearly a like number of patients entered the same division, and the results were the same. It must, therefore, be admitted that this mode of treatment has been at once one of the most simple and the most successful. This observation is not new; but its repetition at present is not superfluous.

M. Gendrin, who comes next in the numerical series, distinguishes in general four degrees of the disease; precursors lasting for days; vomiting and cramps; then violescence of the face and extremities; and, lastly, reäction. Half an ounce of sulphate of *alumina* was dissolved in a mixture consisting of two ounces of barley water, and two ounces of syrup of quinces, with three grains of the bare extract, and a spoonful was given every half hour in a glass of cold water, which was also used for drink. A bladder full of pounded ice was applied to the belly, and the extremities were vigorously rubbed with a mixture of equal parts of the balsam of Fioraventi and traumatic alcohol. Lastly, the patients in stupor and *asphyxia* were subjected to the cold affusion for one or two minutes.

These measures were not followed with all the success desired; and the same physician afterwards varied his directions considerably. Latterly, he appeared to confide for the treatment of the early period of the disease in blood-letting, energetic revellents to the inferior extremities, and the internal use of ipecacuan. These means furnished favourable results, but only when the intensity of the epidemic appeared to abate. M. Laberge, resident pupil of M. Gendrin, has stated, that at first one cure only was obtained among seven or eight patients.

The following beds belonging to M. Dupuytren, were occupied by a very great number of patients with severe symptoms, and of whom, consequently, a considerable proportion, more than two-thirds, sunk. A certain number, indeed, of these choleric cases brought moribund, expired either on the stairs, while they were being conducted to the ward, or on the litter, before there was time to undress them; and these cases, though reckoned in administrative statistics, ought to be deducted from the medical report. Documents afterwards published by M. Dupuytren show, that from the 7th of April to the 13th, he has lost a little more than a third of his patients,—a result which restores the equilibrium, and shows that the numerical mortality has been raised only in

consequence of accident which placed on his beds dead subjects, or patients in the last agonies.

The treatment of M. Dupuytren, besides the acetate of lead, already mentioned, and cauterization of the epigastrium, which was practised in one case only, consisted in friction of the extremities with flannel soaked in a concentrated decoction of mustard with alcohol, covering the body with emollient fomentations, leeches applied where pain was felt, and lastly, drink of infusion of lime-tree flowers, edulcorated with syrup of *diacodium*, in the rate of one or two ounces to the pint of ptisan. Subsequently the professor announced that he confined himself to follow indications as they rose, and abandoned all thought of specific cure.

M. Petit, perhaps, was the first to entertain the opinion of acting in a continuous manner on the spinal cord, and producing changes in the phenomena of innervation. He consequently caused to be placed along the whole part of the spine a piece of cloth soaked in a liniment composed of one ounce of oil of turpentine, and a drachm of hartshorn. Over this was drawn a very hot smoothing-iron; and the result is an instantaneous evaporation of a great part of the liniment, which then acts strongly on the skin of this region, and produces speedy vesication. By this ingenious method the spinal cord is irritated, and very soon under this influence the heat returns, the vomiting and cramps abate, the circulation is reëstablished, and the patient experiences considerable improvement. Its action is further promoted by various accessory means, such as hot bricks, previously enveloped in cloths dipped in vinegar, round the extremities, frictions, with decoction of mustard, stimulated by hartshorn, and the internal use of balm and mint tea. At the same time, a mixture consisting of distilled lime-tree and balm waters, two ounces each, twenty drops of laudanum, and one ounce of etherated syrup is given in spoonfuls every hour, and frictions by a liniment composed of two ounces of camphorated chamomile, a drachm of laudanum, and a drachm of hartshorn, are actively used.

Though, like all the physicians of the Hôtel-Dieu, M. Petit lost during the first days of the epidemic a very great number of patients, afterwards he was more fortunate than many among them, and probably in consequence of his method of treatment. According to a notice read by him to the Academy of Medicine, on the 10th of April, his cures were in the proportion of two in three. We repeat that this can apply only to the patients admitted since the 5th of April; for, previous to that in the St. Martine and St. Monica Wards, the proportion was inverted.

M. Husson employed at first the diffusible stimulants, tonics, and external revellents or irritants. The unsuccessful results were very numerous; and other methods were practised. He applied leeches, bled, and administered mild drinks; he had recourse then to the anti-emetic potion of Riverius; then to protracted baths; to anodyne clysters, and, under the influence of this method, he saw several recoveries take place. They were indeed few; for, on the fourteenth day of the epidemic, of 140 choleric patients placed on his beds, he counted only 5 or 6 well-established cures. Too much reliance must not be placed on convalescent cases, for they often expire very quickly, without time being given almost for a relapse.

The treatment pursued by M. Magendie enjoys, in the meantime, a celebrity quite popular. Journals of all ranks have proclaimed the good effects of punch; and they might be believed if we knew how far publications of this sort must be trusted. A diffusible stimulant given in the cold stage produces reäction; but it must not from this be inferred that all the patients are thus cured. Like all his colleagues of the Hôtel-Dieu, M. Magendie witnessed more than one-half of his choleric patients expire; and, modifying his *panacea*, he now gives as a drink a mixture of two ounces of acetate of ammonia, one pound of sugar, and four *litres* (8 pints) of infusion of chamomile. Occasionally he substitutes

for the punch a vinous liquor sugared and spiced with tincture of *canella*, in the proportion of two ounces to two *litres*, or four pints of wine, of which a small glassful is given every hour.

This treatment has been followed by a degree of reäction which it is often difficult to controul. The circulation excited by alcohol soon produces congestions in the head, and digestive apparatus; and more than one patient sunk with delirium, and afterwards deep coma. This congestive state, local and general depletion were always as inadequate to remedy as the application of cold to the head, and the most active revellent irritants to the feet.

M. Gueneau de Mussy, with his usual sagacity, followed the indications, and treated the principal symptoms as they required. Like M. Honoré he obtained favourable results from this progress; he modified the *formulæ* according to the particular cases which were presented; and recognising the uselessness of a great display of resources against cases which the simplest examination showed to be fatal, he was contented to treat those which might reasonably become so.

M. Bally has tried the efficacy of many energetic agents. *Opium*, given in large doses by all channels, he very soon abandoned as injurious in the period of collapse, and useless in others. The *sulphate of quinine*, in doses of from 30 to 40 grains, produced no benefit in four patients, and was also abandoned. The oil of *croton tiglium*, so much commended by several physicians of the East India Company's service, was of no avail to a poor woman, who quickly expired. Local and general bleedings, iced water, and other means were successively relinquished. *Lastly*, recourse was had to galvanism, which appeared to revive with promptitude *two* or *three* patients brought in a very advanced stage of the disease; but it has rarely been employed since; and M. Bally satisfies himself with general measures, excepting the modifications which are the result of his peculiar therapeutical ideas. In conclusion, if he has lost many more cases than his colleagues, it partly depends on this circumstance, that the 30 or 40 first choleric cases brought to the Hôtel-Dieu were treated by him alone, and that, with a single exception, all of these died.

M. Recamier found, in these afflicting circumstances, a new occasion to demonstrate the fertility of the resources of his inventive mind. Has this celebrated practitioner been more fortunate in results? That we cannot assert. In the mild form, or in the period of onset, he draws blood from the veins, till this fluid appears to become red in the air; he gives every second hour eight drops of laudanum in four spoonfuls of rich mucilage or gum arabic, aromatized with peppermint water. He warms the patient to restore heat and transpiration; he applies to the belly very hot cataplasms slightly stimulated with mustard, or a volatile camphorated irritating liniment; he orders repeated injections with decoction of bran, of starch, or of bread crumb, adding a little laudanum. If the diarrhœa continues, he exhibits half an ounce of *arnica* root and one-fourth of a grain of nux vomica, gradually augmented afterwards.

In violent *cholera*, or the blue stage, M. Recamier still bleeds a little, but cautiously; he excites reäction by means of affusion for a single minute of water at 58 or 59° F., and after drying the patient, and placing him in a warmed bed, the skin is very soon covered with sweat. With cold rice water for drink, a spoonful of a solution of sulphate or of hydrochlorate of soda, according to the state of the stomach, was given every quarter of an hour. Reäction being established, the treatment of the first stage is gradually introduced, and the chief study is then to moderate the congestions which take place on the different organs.

M. Recamier states that he has ascertained that opium, camphorated ether, acetate of ammonia, sulphate of quinine, and the other fixed or diffusible tonics, are absolutely useless in the blue period, and that sinapisms and all the rubefacients are equally unavailing. The small number of recoveries even which he obtained in the commencement of the epidemic, appears to him to be owing to the cold affusion, the iced drinks, and the blood-letting. Afterwards the

same physician had recourse to sulphate of soda in strongly purgative doses, to ipecacuan in powder and decoction, and massing or kneading the surface instead of friction; but he contends that the different periods of the disease should be well distinguished. The blue period is, in his opinion, utterly beyond the resources of art; vital resistance is extinct, and the means employed to excite its return serve only to accelerate death, because the organism does not obey them. It is as if a whip struck a corpse.

M. Sanson began by prescribing a very hot and strongly sinapised *pediluvium*, or by subjecting the patient for some minutes to the cold affusion. He then ordered a spoonful of a mixture of four ounces of the jalap of diacodium, and one drachm of sulphate of alumina, to be given every hour; two clysters daily of decoction of poppy heads, and a drachm and a half of sulphate of alumina, and rice decoction, for drink. M. Sanson remarked that the aluminous mixture, which has a very nauseous taste, appeared agreeable to the patients for some time, but became soon insupportable. In the first case, there was endurance of the stomach, and it ceased as soon as the symptoms were abated. Under the influence of this treatment, as of all the rest, the half at least of the patients died.

M. Breschet, who had at first adopted the electro-puncture, very soon abandoned this remedy, the success of which was only temporary and ineffectual. He gave diffusible stimulants of every kind; he bled, cupped, and scarified the epigastric region, and gave cool liquors for drink. He employed volatile liniments, affusions, external revellents of every kind, but nothing in particular.

We may say as much of M. Caillard, who, engaged by the nature of his duties at the Hôtel-Dieu, leaves to zealous and intelligent pupils the charge of carrying into effect a plan of treatment, the outline of which he concerts with them. These gentlemen have not had occasion to regret the loss of a greater number of patients than the other physicians; and the result affords a new proof of the little efficacy of any therapeutic method in cases of severe cholera.

In conclusion, to establish in a general manner the value of the different curative methods adopted at the Hôtel-Dieu; and to avoid an unjust division of unsuccessful issues among the 12 heads of the service, we shall give the general results, leaving to each of these gentlemen to furnish the individual returns. Thus, on the 17th April, at midnight, 1771 choleric patients had been admitted into the Hôtel-Dieu; of this number 1054 died; 344 went out cured or convalescent, and the residual 373 are still under treatment, and several must die. This shows that these deaths are in the proportion of two-thirds.

Professor Chomel, who conducts at the Hôtel-Dieu the course of clinical medicine for the faculty, had received in his wards during the first days of the epidemic, two choleric cases of the inflammatory character, which, treated by antiphlogistic measures, underwent at first a remarkable improvement. In one patient, typhoid symptoms soon supervened, and carried him off on the fifth day of his convalescence. The other sunk in like manner, after showing remarkable improvement.

The distribution of the choleric patients in the first two wards, being opposed to that of which M. Chomel had charge, it was only afterwards that a division of the St. Paul ward was assigned him. In this division remedial means were wisely afforded; and after a conscientious examination, we have found that the treatment of this distinguished practitioner, though neither extraordinary, nor very energetic, nor incendiary, nor extenuating, furnished neither more fatal cases nor less success, than that of physicians who announced pompous results from particular methods.

In all the cases of cholera deemed inflammatory, that is, with preservation of pulse and heat, cramps and vomiting, &c. M. Chomel prescribed blood-letting, and applied leeches to the epigastrium, and gave opium in pills. For drink he gave solution of gum syrup; the belly was covered with cataplasms, and the legs were rubbed with camphorated oil of chamomile.

In the *cholera algida*, or chill form, he employed decoction of coffee, and a blister on the spine, from the nape to the middle of the dorsal region. External warmth was applied by all means. The gum-syrup solution formed the basis of the fluids drank, though tea and lime-tree infusion were also given, and for the diarrhœa rice-ptisan with opium. In some cases of chill cholera, M. Chomel employs the blister to the epigastric region, and placed on the exposed *derma* half a grain of acetate of morphia. In cases with delirium he applied leeches to the mastoid processes, and, in short, founded his prescriptions on the character of the principal symptoms.

We shall be able only subsequently to furnish an exact statement of the number and kind of the patients treated in the division of M. Chomel; but we may be assured that its exactness will be unfortunately too rare in the actual circumstances. We shall in the meantime advert to the results obtained in other hospitals.

La Charité.—The central position of this hospital brought to it a great number of patients; and on the 27th there were 3 cases. From this period to the 2d April, 30 new cases were admitted, on the disposition of which the same precautions were observed as at the Hôtel-Dieu. Two wards, St. Jean de Dieu for men, St. Magdalene for women, were selected as the most salubrious and the best situate to facilitate the duty. MM. Fouquier, Lerminier, Rullier, Rayer, and Dance, shared the beds in equal numbers.

Entertaining nearly the same opinions on the mode of opposing the disease, these practitioners studied to produce reäction as promptly as possible, and to controul it when it displayed excessive violence. M. Fouquier prescribed in a potion of aromatic distilled water, two drachms of acetate of ammonia, and one ounce of canelion water, to be given in spoonfuls. He ordered also three or four grains of the watery extract of opium, in divided doses, during the day; several sinapisms at the same time to the legs, to be renewed if needful; frictions with camphorated spirit, and infusion of chamomile for common drink. When reäction was speedy and vigorous, he ordered fifteen or twenty leeches to the epigastrium.

M. Rullier caused the bodies of his patients to be rubbed with a liniment consisting of tincture of bark and camphor; he applied sinapisms, and administered every half hour spoonfuls of a mixture consisting of a scruple of sulphuric ether, a drachm of laudanum, and an ounce and a half of distilled water of lime-tree and mint, in a decoction of poppy heads properly edulcorated.

After frictions and other external means of warming the patients, M. Lerminier caused them to drink a small glassful every hour of a mixture composed of two ounces of syrup of valerian, two drachms of alcohol, and twenty-four drops of *aqua ammoniæ*, in two pints of infusion of mint and orange flowers. In the intervals, or instead of this stimulating ptisan, he prescribed a mixture consisting of two ounces of peppermint water, half an ounce of acetate of ammonia, two drachms of sulphuric ether, two drachms of laudanum, and two ounces of syrup of eyebright. By these remedies a good degree of head was promptly obtained, and to them more than one patient owed his recovery.

We wish we could detail the treatment pursued by the young and unfortunate M. Dance, who was to have published in the Archives the result of his observations on *cholera;* and the acuteness and conscientiousness with which they would be made, are well known. A deplorable event deprives us of the information to be furnished by an observer so judicious; and we know only that the treatment which he had begun to follow, was that of M. Fouquier already mentioned.*

By a note of M. Danyau, head of the clinical department of La Charité, we learn, that of 83 cases admitted under M. Dance, 40 died, 12 were cured, and the rest were under treatment. Among the 40 deaths, two-thirds died

* M. Dance, physician to the Cochin Hospital, was attacked with cholera, about the beginning of April, and died, after a painful struggle, on the 18th.

after remaining less than three hours in the hospital, part of the residue in twenty-four hours, and none survived the third day. M. Dance derived great advantage from the application of dry cupping applied round the base of the chest; and M. Danyau, who continued his duty, has much reason to congratulate himself on the use of the means which has superseded *asphyxia*, and revived the action of the heart. M. Dance had almost entirely renounced the employment of opium, especially by the mouth; and he gave cold lemonade, Seltzer water, and ice in pieces; and these means almost always succeeded in checking the vomiting.

M. Rayer, one of the physicians who has in the best spirit observed cholera, has given us a note, which we almost literally transcribe, because it constitutes one of the most useful documents on the treatment to be followed in the different forms of the disease.

The first choleric cases entrusted to the care of M. Rayer, were mostly in a desperate state. They were old men dying, or adults with the most severe symptoms of cholera. At first glance, and at any other period, they might have been taken for drowned persons expiring. Next day, and the following one, similar admissions continued; but several patients were now distinguished in whom life appeared less nearly extinct; and several hospital patients were attacked, and presented successively the several symptoms of the different stages. Comparing these facts with some others much less severe observed in the city, M. Rayer perceived, that it was less important to seek a remedy against cholera than to study carefully its individual varieties, the shades, the degrees, and the complications, in order to adapt to its periods, or its various forms, a distinct and rational treatment. With this object, and to distinguish the principal conditions in which each patient was at the moment of admission, he fixed on the leaf of his diagnostic register; *slight cholera, or the first period of cholera; severe or chill cholera; simple or complicated cholera; cholera slight at beginning*, or with threatening of the second; and the adopted peculiar modes of treatment for each of these morbid conditions.

In *slight cholera*, or the *first period*, distinguished by the feeling of a bar across the pit of the stomach, and giddiness, soon followed by thirst, purging, and vomiting, more or less abundant and repeated, by the continuance of the pulse almost natural, or only slightly enfeebled, with little change of voice, cooling of the head, or in the colour of the nails and skin of the hands,—M. Rayer administers opiates and rhatany root in draught, ptisan, or clyster, as the evacuations take place upwards or downwards. At the same time he recommends maintaining a gentle degree of heat of the surface; even to raise the temperature, and excite sweating by the aid of hot bricks at the flanks, and bags of hot bran on the belly; cramps are to be stopped by the application of sinapisms; and thus a cure almost uniformly is effected in children and persons of mature age, unless the symptoms of the second period appear, which usually happen in old men, or in men of mature age but deeply impaired constitution.

In *severe* or *chill* cholera, marked by burning thirst, discharges of watery, turbid, whitish matter upwards and downwards, and by suppressed urine, &c. M. Rayer orders the application of four sinapisms, two to the legs and two to the forearm, compresses impregnated with hartshorn on the chest, etherated Malaga wine given in spoonfuls every two hours, less frequently if it is not borne; decoction of rhatany acidulated with citron-juice; dry frictions and warmth to the surface; and clysters of rhatany, etherated and opiated. By these means reäction may be developed, unless in persons beyond 70, in whom life is extinguished almost directly by the cold stage of the disease. In one person only beyond 70, a woman of 74, did M. Rayer witness reäction established.

When reäction takes place it is requisite to maintain it, and yet to keep it within due bounds; and unless this is done, local determinations and violent inflammations,—*secondary disorders*, greatly more frequent now than at the commencement of the epidemic, are established; and existing diseases are at the

same time aggravated. As a secondary disease, M. Rayer observed among about 200 cholera patients, one acute *peritonitis*, one *amygdalitis*, two cases of *erysipelas* of the face, three cases of *pneumonia*, several of *gastritis*, and a greater number of *cerebral affections*, slight or severe. After death he never met inflammation of the *spinal cord*, or the great sympathetic. To watch the arising symptoms of these diseases, M. Rayer performed two visits daily to the hospital; and in the interval the cases were observed by an intelligent pupil.

According to M. Rayer the cerebral affections observed after the chill stage have a *double origin*. In one the most rare, *(the choleric cerebral state,)* in consequence of reäction, feeble or incomplete, the patients retain a choleric colour, fall into a state of stupor and debility, with furred tongue and brown coating of the teeth, the face cold, and the radial pulse feeble; and if this state continues some days, the patients present the expression symptomatic of the third period of ileo-glandular inflammation, *dothin-enteritis;* and after death no visible lesion was found in the brain and its membranes. In the second case, *(cerebral congestion,)* in consequence of powerful reäction, spontaneous or induced by art, the patient becomes dull and stupid; the face is red and hot, especially in the evening, the pulse more distinct, and the eyes injected; agitation and sometimes delirium take place in the night, with red dry tongue, thirst, &c.; and after death in general the cerebral veins are injected, and sometimes the cerebral substance is of a rose-red tint, with or without serous fluid in the cerebral cavities. In the first case M. Rayer ordered blisters to the inside of the legs, if the sinapisms employed in the chill period had not vesicated, vinous water for drink, and clysters of etherated rhatany decoction. In the second state, and sometimes before its development, from the first moment of strong reäction before the appearance of cerebral symptoms, M. Rayer prescribed warmth to the feet, cold by compresses, or ice to the forehead for several hours, especially in the evening, or leeches behind the ears, and keeping the patient up during the day if possible. Local inflammations were observed to be more severe in choleric subjects than in any other condition; and blood-letting, though urgently indicated, proved speedily fatal. A choleric patient attacked by *pneumonia* of the left side, died some hours after blood-letting; and the inferior lobe of the lung was found condensed and infiltrated with black violet-coloured blood, similar to mulberry juice.

M. Rayer saw cholera induce abortion in pregnant females, supervene at the moment of labour, and the infant born dead, and in those suckling gave rise to the most severe and fatal symptoms. Cholera appearing in persons already attacked with other affections, always belongs to the first class.

Occasionally the first disease disappears after the cure of the cholera, as happened to an Englishman labouring under tertian fever; and in other cases it is little modified, as occurred in a young person with the third degree of *pneumonia*, and in whom, after the cure of the cholera, resolution proceeded. Lastly, the original disease may be unmodified, as occurred in several consumptive subjects who survived the choleric attack, and in two persons with itch, who contracted the epidemic disease.

De la Pitié.—This hospital, situate near several very populous quarters, early received a great number of patients, who filled two wards. MM. Andral, Bouillaud, Louis, Clement, Parent-du-Chatelet, and Serres, as physicians, and MM. Lisfranc and Velpeau, among the surgeons, had the equal charge of the beds, and they determined that a physician and a surgeon should be always in attendance at the hospital to minister to the patients brought. In the first four cases, brought on Thursday, 29th of March, M. Serres prescribed infusion of chamomile, and a draught of ether and laudanum in valerian and mint water. Three of these died the same day, and the fourth had favourable reäction, and went out well at the end of eight or ten days.

The physicians of the hospital adopted at first a uniform mode of treatment, the basis of their remedies being warm vegetable diluents, with opium by the mouth and by clyster, and warming the beds by means of alcoholic vapour. In-

dependent of the obvious impropriety of so general a mode of management, without regard to the character of individual cases, narcotism quickly appeared in the majority, without arresting the unfavourable symptoms of the disease. This method was therefore abandoned; and each physician undertook the treatment of twelve patients, six of each sex, according to the symptoms and the stage of the disease.

M. Andral substituted for the narcotic potion a mixture composed of one drachm of acetate of ammonia, fifteen grains of sulphate of quinine, twenty drops of sulphuric ether, and twenty grains of camphor; allowed cold lemonade; and caused the extremities to be rubbed with tincture of cantharides. For profuse diarrhœa he ordered clysters, containing each twenty drops of laudanum, and twenty grains of sulphate of quinine. During reäction, blood-letting, local or general, was employed according to circumstances. At the onset of the disease, M. Andral at first employed blood-letting, and afterwards ipecacuan.

M. Bouillaud found in the first dissections sufficient reason to employ antiphlogistic means freely, with revellents and opiates only; and on the 6th of April, he had already inspected the bodies of more than forty victims of the disease. Though he maintains that inflammation of the intestinal mucous membrane performs an important part on the disease, and makes one of its essential elements, he admits that the antiphlogistic method is useful only at the onset of the disease, before the chill stage. Leeches to the epigastric region repeated, if requisite, four or five times, iced liquors, currant water, emollient cataplasms and clysters, slightly narcotized, and a strict diet, are his chief remedial means. In severe cases, however, he allows weak coffee, and cauterizes the region of the spine after the method of M. Petit; and under this application, breathing and the motion of the heart was restored in individuals who appeared dead.

M. Clement placed great reliance on the preparations of quinine, which were applied endermically when they seemed to augment vomiting; and in one case fifty grains were applied to the epigastrium, thighs, &c.; in othes cases by the mouth and by clyster.

M. Serres employed the antiemetic draught of *Riverius*, tartaric and citric acids, blisters and sinapisms, during collapse, and blood-letting, general and local, in the stage of reäction.

M. Parent-du-Chatelet prescribes, in the severe period, alcoholized lemonade, an etherated draught, Madeira, a clyster of rice water, with extract of rhatany and laudanum, and friction; during reäction, emollient liquids and venesection, if requisite. These means have been successful in many cases, and have been adequate to restore some of those who were narcotized during the treatment of the first days of the epidemic.

It has been impossible hitherto to obtain accurate returns of the number of cases of both sexes treated under M. Louis; but, according to the statements of M. Eager, his pupil, with a sufficient number of blue cases, the instances of ordinary cholera were numerous. The general treatment of the cold stage consisted in friction and hot cloths externally, alcohol and laudanum draughts internally, ice for checking the vomiting, and local and general bleeding, which appeared to relieve the oppression, but which was generally unavailing when the radial artery had ceased to beat. During reäction the disposition to local congestion was opposed by local and general blood-letting, which sometimes succeeded, but more frequently failed.

In the nescropic inspections of this physician, the same results were almost uniformly remarked. The intestinal mucous membrane of the small or large intestines was commonly ecchymosed; in other cases the submucous cellular tissue was much injected; the *plicæ* of the jejunum sometimes remarkably injected; the mesenteric vessels, the superior and inferior *cavæ*, loaded with dark-coloured blood; the heart filled with black coagulated blood; the lungs much obstructed with black blood; the bladder remarkably retracted, but its mucous membrane sound; the liver slightly injected; the gall-bladder distended with

black ropy bile; the Peyerian glands usually well-marked, distinct and prominent; violet-red patches in various points of the intestinal mucous membrane; the gastric mucous membrane, like the intestinal, more or less reddened, and often remarkably mammillated. The brain, sometimes injected, contained serous fluid, more or less clear. The skin was violet-coloured; and tetanic rigidity of the extremities was always distinct.

M. Velpeau, like all his colleagues, varied his treatment according to the indications. After the 3d of April, for the opiate he substituted mercurial frictions apparently without benefit. His general mode of treatment consisted, after rolling the patient in flannel, in sinapisms to the feet, knees, and thighs, blistering the epigastrium, clysters of sulphate of quinine, laudanum, and camphor, repeated as required, aromatic diluents, and the endermal use of quinine. By these means several, apparently dying, recovered. M. Velpeau tried charcoal internally, punch, and large doses of calomel without advantage.

The supposition of M. Reveille Parise, that persons with cauterized issues, blisters, or even old wounds, are not attacked by cholera, was disproved by the experience of M. Velpeau, who saw six women attacked in a surgical ward where they were kept for old ulcers and other diseases with established suppuration.

Between the 11th and 18th of April inclusive, M. Velpeau lost 11 of 30 choleric patients; 6 went out well, 5 were convalescent, and 8 remained under treatment; and in the two latter divisions several deaths did take place, and reduced the number to one-half. This proportion is small, and all candid physicians agree that it is often much more. It remains, nevertheless, to be told what number of these cases were severe, what number were women, and at what period they were brought to the hospital; and it is further to be remarked, that the mortality at the time specified was less than at the beginning of the epidemic. The following sketch by M. V. gives a general idea of the cases treated at La Pitié.

Between the 30th of March and the 15th of April, 592 choleric cases were admitted into the hospital at La Pitié; and of this number 103 went out cured, 176 remain under treatment, and 313 died. During the first week they presented in mass with vomiting, diarrhœa of very fluid white discharges, cramps in the arms, colic pains, hollow eyes, icy cold of the head and arms, violet tint of the face and hands, thready or insensible pulse, and extinct voice. Afterwards this assemblage of symptoms was no longer observed in so large a proportion. Blueness and chillness were wanting in many of those admitted the last week. Some had only profuse exhausting diarrhœa with the choleric characters. Some were distressed by nausea and cramps, and had a bluish tint. Others colliquesced under profuse sweating, which was occasionally cold and clammy. Some with expressive look, complained of acute tenderness of the epigastrium, and burning heat all over. Lastly, in this as in other hospitals, we saw cases which proceeded at once to the highest degree, and in all intermediate shades; and it is impossible to distinguish between the cases of genuine *cholera* and the choleroid. Many persons, after undergoing the first period for five or six days, became victims of the second,—showing that they are probably only different degrees of the same disease.

As to predisposing and exciting causes, and hygienic conditions, we have nothing definitive or conclusive. Old men, valetudinarians, drunkards, ill-clothed and ill-fed subjects, who at first afforded so many cases, were soon accompanied in their calamitous attacks by persons of every age, and of all constitutions, who, without being in affluence, observed, nevertheless, substantial regimen, and led regular lives. They came from the best situate streets, (*la rue Copeau, la rue de Boulanger,*) as from the most unhealthy. They were of all professions. Women, who formed only a fourth part at first, terminated in a much larger proportion. We had only three patients between eight and fifteen years; and at this date, (17th of April,) we have all the varieties enumerated above. The livid tint is not so rare as some persons have asserted; and four cases of six received

yesterday presented it in the highest degree. One person, though with all the other symptoms of severe *cholera*, has only *nausea*. A woman who had merely vomiting and cramps, without diarrhœa, died, nevertheless, this morning after thirty hours of illness. The number, however, of those who have only profuse discharges, slight cramps, without lividity or extinction of the pulse, and who recover, has sensibly increased for some days.

Patients die at two distinct periods. Either struck as if with lightning they die in agony before reäction, or heat indicates the return of the circulation; or after being painfully rescued from the first state so far as to seem out of danger, they relapse either into stupor with depression, or into delirium and adynamy, then linger a few days, and perish like others in defiance of the most varied modes of treatment.

One patient of this class having ceased to vomit, to be purged, and to suffer, having got rid of the blue colour and cadaverous look for two days, fell into a state of *coma vigil*, without delirium and raving, and without dry mouth, and died at the end of forty-eight hours without other symptoms. Another, after three days of improvement, died as if suffocated by œdematous *angina*, though the throat presented no change. A third case, which seemed for two days to be convalescent, was on the third day in a state of listlessness, of stupor, and agitation, which only ended with death in the evening. Lastly, they seem to be stifled under the influence of violent congestion, either of the brain, or of the lungs, or of some other organ.

In the first period, the tongue may be pale, smooth, nearly natural in some, and covered with grayish or yellowish thin fur in others. After reäction it may be slimy and whitish, red and punctulated on the edges, grayish, black, yellow and moist,—or unchanged. It is crusted and parched in a small number.

The necroscopic appearances are pretty uniform. In most subjects the mucous membrane of the digestive passages is punctulated with minute ecchymotic spots, more or less approximated in its whole tract, and it may present large patches more or less intensely red, occasionally approaching to dark crimson. On Tuesday and Wednesday, for instance, I found in three subjects the stomach as black as coal, from the *cardia* to the *duodenum*, less so at the small arch, more at the large *fundus*, while neither washing nor friction could diminish this tint, which was without evident thickening or softening of the tissue. The blood appeared fixed in the capillaries, and the whole membranous surface was ecchymosed on the free margin of the *rugæ* as well as on their intervals. Great part of the small intestine presented the same appearance; but the colon was scarcely changed.

In others, though coloration was almost entirely deficient, the mucous membrane could not be termed sound. Its *villi*, thicker and more prominent, gave it a strongly-marked villous character, though it was whitish, of a dull white, or merely dotted red. The red or bluish tint appears, all other circumstances being equal, to be deeper as the body is inspected later after death. The Peyerian glands were developed without manifest change. The lymphatic glands were unaltered; the system of the portal vein much obstructed. The bladder was empty and shrivelled; in one case only was it distended: and in other respects sound. Engorgement and sometimes *emphysema* of the lungs, *ecchymosis* of the heart, and black blood in its chambers, and more serous fluid than usual between the folds of the vertebral arachnoid, and in the cerebral ventricles and subarachnoid tissue were the other most ordinary appearances. The contents of the intestinal tube are well known.

The Hospital of St. Louis received many choleric cases, which were at first admitted in two wards, but which were afterwards dispersed in all the divisions. Here, as elsewhere, very opposite methods of treatment were followed with nearly equal degrees of success.

Alibert, regarding *cholera* as a pernicious intermittent, after the example of Torti, who made it a particular species, gave sulphate of quinine in grain pills every hour, *cinchona* wine in spoonfuls every half hour, and *cinchona* glysters,

with external warmth. The actual advantages of this method are not known, as it was soon modified by combining it with the preliminary exhibition of ipecacuan, when it is said to have been very successful.

M. Biett, who had the charge of a ward of twenty-eight beds favourably arranged, well-aired, and abundantly provided with the means of attendance, has treated a considerable number of choleric cases, the total amount of which, however, is not yet given. Adopting the idea of miasmatic poisoning as the cause of *cholera*, this physician administered internally charcoal in doses of half a drachm every hour, with the effect of checking the diarrhœa, and exciting the flow of bile, but not greatly controlling the cramps and vomiting. He states, also, that he has given the subnitrates of bismuth in doses of six or eight grains every two hours, with the effect of controlling the cramps. Calomel and opium was given in a few cases. In cases of local congestion, blood was drawn by cupping from the ileo-cœcal region, and by leeches from the anus. Of nineteen cases, thirteen are said to have been cured; but the precise mode of treatment is not given.

M. Gerdy, second surgeon of this hospital, received from the 6th to the 14th of April 103 cases; and of these 20 died at the close of a few hours, and consequently could not display the effects of treatment; 16 died after one or more days of treatment; 23 went out cured; and lastly, 44 were still in hospital at the date of the report, and among these many truly convalescent. The number of deaths rose to about one-third of the whole,—a smaller proportion than elsewhere, and less still if the number of deaths be reduced by deducting those who expired without any treatment. The mortality is then 1 in 5 or 6 cases.

The first twenty-seven cases were admitted at the most severe period of the epidemic, all with vomiting, pain of the epigastrium or belly, frequent stools, suppression of urine, feeble or extinct pulse, violescence of the face and extremities, coldness, and cramps. The subsequent group rarely offered this assemblage of symptoms, which then occurred separately or successively; and though the disease was less violent, many still died in some hours, eleven, in short, of twenty, or more than a half.

Viewing the disease as a species of *asphyxia*, produced by affection of the nervous system, M. Gerdy employed friction by an irritating, but not vesicating liniment, to recal heat; large blisters along the vertebral column to stimulate the organs of the nerves, and excite respiration and circulation, sinapisms for revulsion and allaying cramps; starch opiate clysters to obviate diarrhœa; in a few cases blood-letting to controul congestion; and lemonade, pectoral ptisan, or sugared Seltzer water for drink. These means have in general fulfilled the indications proposed.

Hopital St. Antoine, Hopital des Enfans, Hopital des Veneriens, Hopital Necker, &c.—The choleric cases admitted at St. Antoine were numerous, and were placed under the care of the physicians, MM. Kapeler, Mailly, and Guerard, and of Professor Berard, the surgeon of the institution.

M. Kapeler administered at the onset of the epidemic, laudanum, laudanum and ether in mixture, cinchona clysters, with laudanum and extract of rhatany, dry aromatic frictions or sinapisms, and external heat. This mode of treatment was followed by speedy cures, and also violent attacks of cerebral congestion, which rapidly destroyed convalescents. Neither blood-letting nor leeches controlled the symptoms. Opium was then abandoned. The tepid bath, stimulated with two pounds of soda or potass, followed by thirty drops of laudanum, were soon followed by heat and transpiration. In cases of deep collapse, an etherated camphor mixture was given by the stomach, and camphor was thrown into the intestines; and a terebinthinate camphor liniment was actively rubbed on the person. Sulphate of quinine and cold affusion are said to have been used without benefit.

M. Mailly, who gave little opium except at the onset, employed acetate of ammonia, etherated syrup, and infusion of peppermint in the cold stage; and

congestion he opposed by leeches and temporary blisters. By these means several cures were effected. Of 70 cases admitted into the St. Paul and St. Cecilia wards under his care, between the 1st and 6th of April, 14 were completely cured, and since this period, the success has been greater.

Hopital des Enfans.—In Paris, as in every other place, the number of children attacked has been inconsiderable. At the Hôtel-Dieu, to which the first patients, without distinction of age or sex, were brought, they received only 16, ten boys and 6 girls, and only two were about 5 or 6. At the Enfans Malades, on the 18th of April, the number of choleric cases amounted only to 87, 40 boys and 47 girls. The total deaths were 45, and the majority of these children were from 4 to 5 years or more. At this time of life, as in old age, reäction is not established, and *asphyxia* quickly cuts off the patients. Among the children above 7 or 8, the deaths are in the ratio of 1 in 3. In these subjects much is to be dreaded from the effect of cerebral congestion, which is speedily fatal.

M. Guersent employs in the chill period revellents to the skin, and stimulants internally; during reäction he applies leeches to the epigastrium, or behind the ears, emollient cataplasms and mild liquids for drink. Against typhoid symptoms, if they subsequently appeared, he gave *cinchona*, claret or Alicant wine, and blisters to the nape of the neck, or the occipital region.

MM. Jadelot, Baudelocque, and Bouneau, to each of whom one of the divisions of this hospital was intrusted, employed analogous means, and also used ipecacuan, calomel, the boric acid, &c.

Between the 6th and the 13th of April inclusive, forty-five choleric cases were brought to the Hopital des Veneriens, and under the care of M. Ricord, who ordered frictions along the spine with a very volatile liniment, the cramps were almost always allayed. None of the patients of this hospital under the actual use of mercurial frictions, were attacked by *cholera*, and it was even remarked, that few persons labouring under syphilis were overtaken by the disease; and, though several facts disprove the preservative influence of the latter power, it may subsequently become a subject of inquiry to what extent these conditions protect from the choleric invasion. M. Velpeau also employed mercurial frictions from the commencement of the epidemic. M. Jules Guerin, having observed that all the workmen employed in the preparations of mercury were exempt from cholera, thought that the mineral might be advantageously employed in curing the disease; and, with the view of enabling it to operate, he proposes previously to administer ipecacuan, in order to effect a reäction favourable to its influence. Mercurial friction on this principle has been followed by favourable results in cases apparently desperate. But these are too few and too vague to justify much confidence.

At the Hopital Necker, MM. Bricheteau and Delarroque treated many patients from the adjoining districts; and many cases were supplied by the Gros-Caillou, Vaugiraud, Grenelle, and Mount Parnassus. In these populous districts it must be further observed, the women were attacked in much greater numbers than the men; and the admissions at the Necker presented this difference from all the other hospitals. On the 15th of April, the patients admitted since the commencement of the epidemic, amounted to 236, of whom 150 had died. The treatment was founded on the particular symptoms of each patient. The physicians of this institution believe, that, do what you will, it is extremely difficult to obtain any success when the cholera patient is in the blue period, and that all means, even the most energetic, possess little efficacy. The use of the antiphlogistic method, above all, they found pernicious at this period; and, on the whole, the diffusible stimulants were attended with less inconvenience. This opinion, coming from practitioners so respectable, we willingly record.—*Archives Générales, April*, 1832.

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29. *Physiological Treatment of Cholera.*—In the statements in many of the French Journals, relative to the comparative success of different practitioners,

in the treatment of cholera, manifest injustice has been done to M. Broussais. Thus it is stated, that of 292 choleric patients received by M. Broussais in his hospital, the Val-de-Grace, between the 26th of March and the 10th of April, but 5 were cured, or only 2 per cent.: that of 398 patients treated by him between the 11th and 20th of April, 45 only were cured, or 11 per cent.; and finally, that of 312 patients treated by him between the 21st and 30th of April, 42 only were cured, or 13 per cent. This is true, but it is *not* the *whole truth*. It was nevertheless more convenient to those who wished to discredit physiological doctrines, to present this view of the subject, than to exhibit it with reference to the comparative mortality—since the number remaining in M. Broussais' hospital at the period of each return, was very large, whilst in the other hospitals, this number was quite small, and as the convalescents were not thus taken into the statement, this view is entirely against those who have most patients remaining, even though all of them were far advanced in convalescence. The following table, which we believe to be official, and which at least cannot be supposed to be made too favourable to M. Broussais, since it is taken from the journal, whose editor has been loudest in his denunciations of M. B. exhibits the number treated, cured, and died, in each of the hospitals of Paris, between the 26th of March, and the 30th of April, with the number remaining under care at the last named period.

HOSPITALS.	NUMBER OF PATIENTS.				PER CENTAGE.		
	Treated	Cured.	Died.	Remaining.	Cured.	Died.	Remaining.
Hôtel-Dieu - - - -	2052	647	1204	201	32	58	10
Pitié - - - - - -	778	253	405	120	33	52	15
Beaujon - - - - -	446	150	215	81	34	48	18
Charité - - - - -	985	301	568	116	30	58	12
Saint-Antoine - - -	721	238	374	109	33	52	15
Necker - - - - -	374	100	240	34	27	65	9
Cochin - - - - -	177	64	75	38	36	42	22
Saint-Louis - - - -	1449	451	696	302	31	48	11
Vénériens - - - -	169	66	89	14	39	53	8
Enfans malades - - -	107	33	60	14	31	56	13
Accouchement - - -	9	3	5	1	33	50	17
Maison royale de santé	115	38	50	27	33	43	24
Enfans trouvés - - -	7		6			100	
Vieillesse - - - - -	473	93	266	114	20	56	24
Incurables - - - -	85	20	48	17	24	56	20
Ménages - - - - -	115	37	69	9	32	60	8
Orphelins - - - - -	189	92	97		49	51	
Sainte-Perine - - -	3	1	1	1	33	33	34
Le Prince, Gros-Caillou	61	19	27	15	31	44	25
La Réserve - - - -	541	171	192	178	32	35	33
Lazaristes - - - -	57	4	20	33	7	35	58
Clichy - - - - - -	73	7	20	46	10	27	63
Saint-Sulpice - - -	114	32	19	63	28	17	55
Bons-Hommes - - -	27	13	3	11	48	11	41
Val-de-Grâce - - -	502	92	154	256	18	31	51
Gros-Caillou - - - -	369	102	207	60	28	56	16
Invalides - - - - -	166	12	135	20	7	81	12
Rue Blanche - - -	110	26	39	45	24	35	41

If we examine this table in reference to the cures, it will be perceived that the number at Val-de-Grace was less than at any other hospital, except l'Enfans Trouvés, Lazaristes, Clichy and Invalides. But if it be examined with reference

to the deaths, we shall see that the proportion of deaths was less in Val-de-Grace than any other hospital except Clichy, Saint-Sulpice and Bons-Hommes. Now these three last named hospitals were not opened during the early period of the epidemic, when the mortality was greatest, and therefore should not enter into the comparison; and this is more conclusively shown by comparing the mortality in these hospitals during the third period of the epidemic, viz: from the 21st to the 30th of April. The mortality during this period was, at Clichy, 19 per cent.; Saint-Sulpice, 12 per cent.; Bons-Hommes, 20 per cent.; whilst at Val-de-Grace it was only 5 per cent. It is thus manifest that the mortality at this last hospital was less than at any other of the Parisian hospitals; and if we take the proportional mortality during the first period of the epidemic, when stimulants were more profusely and generally used in the other hospitals than subsequently, this will be still more striking. Thus, during the period alluded to, viz: between the 26th of March and the 10th of April, the mortality was as follows:—Hôtel-Dieu, 55 per cent.; Pitié, 47 per cent.; Beaujon, 41 per cent.; Charité, 51 per cent.; St. Antoine, 50 per cent.; Necker, 63 per cent.; Cochin, 40 per cent.; St. Louis, 38 per cent.; Vénériens, 30 per cent.; Enfans Malades, 35 per cent.; Accouchement, 75 per cent.; Maison royale de Santé, 52 per cent.; Vieillesse, 47 per cent.; Incurables, 42 per cent.; Ménages, 24 per cent.; Orphelius, 8* per cent.; Gros-Caillou, 53 per cent.; Invalides, 74 per cent.; Rue Blanche, 35 per cent.; whilst at Val-de-Grace it was only 20 per cent.

The difference of aspect which this subject presents when viewed with reference to the cures, or to the deaths, is owing to the number of patients remaining under treatment being much greater in some hospitals than in others; and in Val-de-Grace the proportion was greater than in any other hospital, except Lazaristes, Clichy, and Saint-Sulpice, three temporary hospitals, in which but few patients were treated, and as they were therefore probably never crowded, there was no necessity for dismissing the patients early in convalescence.

Now, though the actual proportion of deaths and cures can only be determined by the ultimate fate of those remaining under treatment, yet as in the meantime it is interesting to determine which of the two views we have alluded to is the most just, it will be interesting to inquire into the condition of these patients remaining in hospital, and whether it is the number of deaths or cures that they are most likely to augment; if the deaths, the proper view of the subject is that which we have criticised and which is most unfavourable to M. Broussais; if, on the contrary, these patients are to be added to the number cured, the proper view is to consider the proportional mortality. It appears from the tables we have before us, that the number of patients treated at Val-de-Grace during the first period of the epidemic, was two hundred and ninety-two, of whom five were cured, and fifty-eight died, and two hundred and twenty-nine remained under treatment; being 2 per cent. cured, 20 per cent. died, and 78 per cent. remaining. Now it is well known that the course of cholera, when fatal, is a very short one, and therefore if those remaining from the first period under treatment, were not convalescent, the proportional number of deaths during the next period must be increased, and the same as respects the third. But the tables show this not to have been the case in Val-de-Grace; thus, during the second period of the epidemic, of three hundred and ninety-eight patients treated, of whom *two hundred and twenty-nine* had remained from the first period, only *eighty-two* died, or but 21 per cent.: and further during the third period, of three hundred and twelve patients treated, of whom *two hundred and seventy-one* had remained from the preceding periods, only *fourteen* died, or but 5 per cent. It thus seems more than probable that the patients remaining were convalescents. But it will be asked, how is it that the proportion of patients remaining in the hospital of Val-de-Grace was so large? If we advert to the fact of Val-de-Grace being a military hospital, that patients are not considered as cured

* This small mortality seems to have been owing to some accidental circumstance, as during the second period of the epidemic it amounted to 49 per cent., that at the Val-de-Grace being but 21 per cent.

until dismissed, and that they are not discharged until fit for duty, and that convalescence is tedious and protracted in cholera, we have a solution of this question. That it should be larger than in the civil hospitals is satisfactorily explained by the circumstance of patients being usually discharged from such hospitals early in convalescence, and this was especially necessary in Paris during the prevalence of cholera, when the civil hospitals were crowded, and demands for admission so numerous that it was necessary to dismiss the convalescents as early as possible to make room for those recently attacked.

It then appears, if the view we have given of the subject be correct, that the success in the treatment of cholera at Val-de-Grace was greater than in any other hospital of Paris.

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30. *Proposal to Administer Salines in Cholera by the Natural Process of Absorption and Assimilation, instead of Injecting the Veins.* By T. M. Greenhow, M. D. of Newcastle. (To the Editor of the London Medical Gazette.)—Sir,—If I saw any good reason for believing that either new light had been thrown upon the nature of cholera, or any material improvement had taken place in the method of treating that formidable disease since its first visit to this place, I should not have troubled you with this communication; and it is only from a conviction that many hazardous experiments are constantly made use of in the treatment of a disease which, under the most judicious and philosophical management, is too often necessarily fatal, that I am induced again to endeavour to draw the attention of my professional brethren to the necessity of accurate reasoning, and of forming distinct and definite indications of cure, while prescribing for cholera patients. But it will probably be maintained by the advocates of the favourite practice of venous injection, that it is founded upon accurate chemical analysis and strictly philosophical argument—that the immediate effect of the disease is to deprive the blood of its watery and saline constituents, and that the most obvious remedy must therefore consist in replacing them with similar materials. But granting, for a moment, that it were possible thus directly to restore the deficient principles of the circulating medium, (though perhaps a more direct method still would be to inject into the veins the matter discharged from the intestines,) is it philosophical to suppose that we can thus remove the diseased action by which its qualities have been so remarkably altered? If even we could succeed in bringing the circulating mass to the condition in which it was at the commencement of the disease, it by no means follows that the diseased action which *has* already *will not* again deprive it of its defective parts. But how different is the process we pursue from the more elaborate one by which the blood has been originally formed! Compare it with the mysterious processes of chymification, chylification, assimilation, and gradual admixture; and how crude and imperfect must it appear! The whole theory, too, of injecting the veins, must depend, for its consummation, upon the matter introduced becoming intimately mixed with the black, tarry, deteriorated blood which remains in the vascular system; but how is this to be accomplished? How often must it run the round of the circulation, vigorously impelled, before such a thorough combination of two heterogeneous fluids can be brought about? Forgetting, for an instant, the desperate nature of the disease for which this desperate remedy has been suggested, and considering it in the abstract, what effect should we expect to result from it? I would answer, precisely the effect which it has been found actually to produce—a temporary stimulation of the action of the heart and arteries, to be soon followed by painful oppression, and, before long, its complete extinction. I repeat, that, reflecting upon the probable result, such would have been the anticipated, and such have been the actual consequences, of injecting large quantities of foreign unassimilated matter into the veins. Of course I speak of the general rule, for the few exceptions that have taken place are but to be considered as anomalies—remarkable ones it must be confessed, and well calculated to excite attention and give rise to interesting inquiry; but they are too few to warrant a general

pursuit of the practice, and the recoveries which have taken place ought more properly to be considered as having occurred *in spite*, than in consequence, of the treatment.

For the truth of the preceding remarks, I need only refer your readers to the various cases recorded in the late numbers of your own journal—temporary amendments followed by a more speedy death than would otherwise probably have taken place, is the history of nearly all; and I must think the exceptions are fewer than would have taken place under a different plan of treatment. But though it appears to me that a wrong application has been made of the knowledge which we have attained, (through the labours of Dr. O'Shaughnessy in particular,) of the chemical alterations sustained by the blood in the course of an attack of cholera, I am very far from undervaluing such information: on the contrary, I consider it as affording a very useful indication in the treatment of the disease; and if the crude notion of supplying the deficient materials immediately to the circulating mass appear to me unphilosophical, far otherwise is the intention of introducing it through the medium of the absorbents and assimilative process. Such an indication may, with strict propriety, form a part of a rational and philosophical plan of cure. But it may be asked, how can it be accomplished? I answer, by introducing into the stomach and intestines the same matter which has been so profusely thrown into the veins. Four pounds of warm water, with saline and alkaline substances in solution, may be injected at one time into the intestines, and large quantities of gruel, salted to the taste of the patient, may be drank with little or no hazard of being rejected, especially if the gastric and intestinal irritation be previously allayed by a dose of calomel and opium. This fact I have satisfactorily put to the test three several times during the present week. The first patient, (a man about sixty years of age,) in whom the vomiting and purging of enormous quantities of rice water had gone on for seven hours, whose extremities were blue and wrinkled, and whose pulse was totally imperceptible, rallied to such an extent as, but for his advanced age, (which I consider a perfect barrier to recovery in such severe cases,) would have warranted good hopes of success; and in the other two, (both females,) whose cases were less severe, though sufficiently marked, convalescence has been the result. I would suggest, therefore, in addition to the principles of treatment which it was my endeavour to establish in my lately published Essay on Cholera, that the deficient ingredients of the blood—those which have been removed by the profuse discharges which characterize the disease—should be supplied to the circulation, not by direct injection into the veins, but through the natural processes of absorption and assimilation. As I conceive it is the direct tendency of the treatment recommended in the work referred to, to restore organic function, I cannot consider it a valid argument against this practice that no such processes as absorption and assimilation can go on during the continuance of the deranged action which constitutes the disease. It is true that our attention must be directed to the twofold object of checking this action and of restoring the havoc it has made on the stamina of life: the first may be done with considerable certainty; but in the second appear difficulties which I fear neither the venous injections nor the substitute I suggest, will be able always to overcome.

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31. *On Cold Affusions in the Treatment of Cholera.* By WILLIAM AINSWORTH, Esq. —One of the physicians of the Cholera Hospital at Berlin, in writing upon this subject, says, "in those living corpses which are struck with asphyxia, lying cold and without any pulse, external and internal stimuli cease to be so, inasmuch as the debilitated asphyxiated frame cannot in its turn act upon them: no steam apparatus, however vaunted, no warm bathing, no friction, no excitement, is sufficient in these cases." And this is what I am sure every person who has seen the disease will coïncide in. Though produced from internally outwards, and not externally acting inwards, *asphyxia pestilenta* bears a strong relation to death by frost, in which there is an icy coldness of the surface, a

want of pulse, and great congestion of the central parts. In these cases we use frictions of cold snow, &c. until a gradual warmth is restored; and it is on the same principle that sudden cold affusions are indicated in cholera. So forcibly did this strike medical men in this country as a neglected remedial measure, that when the *Berlin Cholera Gazette*, which contained the notice of its successful employment, was made known, every writer was anxious to show that he had himself previously advocated its adoption.

The patient is placed in an empty and dry bathing vessel or tub, and several buckets of cold water are poured on him, while the regions of the stomach and back are subjected to a kind of shampooing or friction; and this process must be repeated if the urgency of the circumstances requires it. No physic is given, and cold water is allowed for beverage. If the pulse revives, the affusions are continued in a tepid bath, and the patient is put to bed, where perspiration is excited by gentle frictions with cold flannels. It must be kept carefully in mind, that cold affusions are only applicable to the second period of the disease, and not to the first; and it is not a universal remedy, but can only be used in particular cases. To secure the convalescence of the patient, it is only necessary that he should be carefully watched, and all symptoms of returning heat and vitality, or recurrence of the usual secretions, be assisted by the exhibition of warm restoratives and gentle aperients, taking care to avoid local inflammation.

MISCELLANEOUS.

32. *Medical Attendance ought not to be Gratuitous.*—"The daily occupation of the medical man is at once the work of public humanity and of personal profit. His task and duty is to do good, to stand by the sick, to cheer the conscious sufferer from vicious indulgence, and to administer solace to the mind, and ease to the body. In the day of battle, the medical man endeavours to save the life which the soldier destroys; and when a national pestilence is abroad, the medical man is chiefly exposed to the pest while watching and learning its nature and treatment. He always performs the work of charity, because he gains his daily bread by being charitable.

"A false notion is now afloat concerning the humanity of medical men. While a disease is threatening to infest our capital, public authorities are wisely convened to forestal and prevent its ravages among the dark and dirty dwellings of the poor; and the poorer people are cleansed and cheered according to the active and diligent instructions of their alarmed superiors. A general feeling of humanity is produced and enforced by private apprehensions. Sobriety, one of the first of Christian virtues, is now proclaimed, not by the voice of wisdom, but by the shout of calamity. In the discharge of this novel duty, the medical man is called upon to take his part; but his part is to be discharged, not in anticipating the arrival of the disease, but in meeting it when it is arrived. He is to hold himself in readiness to rise by night and by day, to enter the houses of the poor, to detect, to touch, to handle, and to treat, a loathsome sickness, and to lean over the bed, or to tarry by its side, till safety or death shall have ensued. If there be any contagion or infection, he is exposed to the baneful influence; if there be any hazard of health, he is open to the obvious danger. We doubt not the moral energy and the professional avidity of any medical practitioner in the encountering of a new disease; the eagerness with which the philosophic physician would hasten, any hour, to survey, perchance to understand and to cure a spreading evil fatal to the lives of men; but no man is justified in wantonly exposing his person to mischief; and every master of a family is bound to consider those who depend upon him for support. The danger may be adventured upon, but only with a prospect of a fair remuneration; and those authorities which require the medical man to serve for nothing, dictate an act of humanity

to be practised only according to the feelings and the means of the individual dictated to. A medical man's time and judgment are purchaseable articles; and they are, like bread and wine, to be purchased in all seasons, both of prosperity and of national adversity; since humanity is exhibited, not by acting for nothing, but in doing to the utmost what is right and proper, in the hope of a legitimate reward. They who do less than this, are inimical to themselves and to the common weal; for how shall society be held together if mutual advantages be not considered? The medical man must support himself by his labour, and he will soon cease to be able to act gratuitously if his labour do not supply him with the means to live.

"But suppose there be no danger of infection, and that the disease were curable by a touch, nevertheless that touch, and that exertion, without hazard, is still worthy of a just reward. So that, if the poor are to be attended gratuitously, let the medical man act for himself, as he frequently does act, without ostentation, by giving, if he choose, his advice and his medicine as a free gift, merely with the hope of doing good.

"These observations are presented to your notice, because some parishes have called upon medical men, and some medical men have voluntarily offered themselves, to act upon a principle of bald humanity—a humanity which is to be exercised according to the authority of a vestry. And it appears to me, (perhaps I am sordid,) that in exact proportion as we are called upon to do more, so are we worthy of a higher pay; and that when our rest and our health are to be exposed and broken, we are not justified in promising our services without the certainty of an appropriate remuneration. Money we desire for ourselves indeed, but more for those who live by our exertions. Money is the source of subsistence. The days are gone when we might pluck, and live with ease and pleasure, from the tree of life; and in England a man will be arrested for nudity, if he have not money to clothe himself withal. The profit to be expected from an extension of name and reputation, is remote and vacuous; and that policy is truly fallacious which places the well-being of an individual or a nation not in immediate, but in a prospective good; since who can foresee or controul the adverse rise of intermediate circumstances?

"Having advanced the principle upon which I, as a man, expect the just remuneration of my services, I am not ashamed to say with Horace—"*quærenda pecunia primum est.*" I would not let my ear be deaf, nor my eye blind to the sight and the sound of genuine poverty; nor would I spare my best exertions to alleviate the afflictions of the unfortunate, the wretched, and the debased; the knot of my purse can be loosed to give as well as to receive; and I should blush indeed if my hand were not sometimes open to bestow as well as to accept. I have learned, from the practice of my profession, the pleasure of doing good; and I only demand for my exertions, especially public exertions, those pecuniary supplies which may still enable me to practise and to study medicine, to support my family, to benefit my friends, and to give to all those who in the hour of need I know will be relieved and comforted by the silent gift of benevolence."—*London Medical Gazette, Dec. 24th*, 1831.

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33. *On the Epizootic Disease at Choisi-le-Roi.** By M. Carrere, late Interne des Hôpitaux.—During the disastrous progress of cholera in Paris, the village of Choisi-le-Roi, while perfectly free from the epidemic, was the scene of an epizootic disease, of which domestic poultry were the only victims. In the history of many other epidemics, we find coïncidences of this description, of peculiar diseases affecting the lower animals, while pestilences were decimating mankind. Sometimes horned cattle, at other times horses, have been especially attacked; but there have not been recorded more than two or three examples of epizootics among birds. Chabert and Boronio have, it is true, described some diseases of birds, observed in France and in Lombardy, but the characters of the affections they describe, are totally different from those observed at Choisi.

* Choisi is situated about five miles from Paris on the banks of the Seine. It is considered a remarkably healthy village.

The cholera had scarcely appeared at Paris, when it was generally reported that a disease of most destructive mortality was raging among the poultry throughout the commune. Here, as at Paris, the cry of "poisoning" was loudly made; all persons who were persuaded that the food and drink of mankind were mixed with poison, found no difficulty in convincing themselves that similar villany was practised in the poultry yards. But the mortality soon reached such a pitch, that this idea was abandoned, and then it was generally reported, that the cholera was the cause of the epizootic.

Wishing to arrive at the source of these rumours, I learned, that since the 3d of April, a vast number of fowls had perished in several houses situated in different quarters of the hamlet. During the first days of the disease, the number of deaths had been very considerable, after which period, the birds were killed by the owners on the occurrence of the first symptoms. In one fowl-yard, of eighty cases, one or two alone recovered. Many remedies, amongst others bleeding under the wings, had been in vain resorted to. *A considerable quantity of the diseased fowl had been eaten by the inhabitants without any bad effect.*

The causes of this malady appear to me altogether unknown, and I saw no reason for supposing it to be contagious. Nevertheless, when a single death occurred in a fowl-yard, the mortality only ceased when it had no more victims to destroy. The most cleanly poultry feeders suffered as severely as the most filthy. The kind of food had no influence on the disease. The fowls at large in the streets of Choisi were attacked with equal severity with those perpetually confined or occupied in incubation. *Rabbits, geese, and ducks, however, lived with impunity in the same yards where the hens were universally perishing, and three turkeys only were affected.*

The disease, generally speaking, commenced in the morning. The hens were noticed to be dull and weak, their wings drooping, and their crops distended with undigested food. In a few cases the disease commenced during the day, and lasted four-and-twenty hours. The respiration was short and hurried, the motions of the heart accelerated, and diminished in force in proportion to their increase in velocity. In almost every instance there had been numerous whitish, liquid dejections. The gullet was distended with thready mucus, which escaped from the beak. The combs were of a livid red colour, and the tint deepened to a violet as death drew near. After the disease had lasted from two to five hours, convulsions usually finished the sufferings of the animal, and death was rapid in proportion to the quantity of the evacuations. In many cases I have learned, that the coldness of the sick birds was very remarkable. A few recoveries were noticed towards the termination of the epizootic. As far as I can find out, about five hundred fowls died of the disease, or were killed in consequence of the development of its symptoms.

After death, the colour of the skin was the same as in fowls strangled without being bled. The bodies were warm for at least three hours, and the cadaveric rigidity was very remarkable.

I have taken much pains in seeking for any pathological alterations which might explain the cause of the disease, but my research was quite in vain. The brain was white, and free from congestion. The heart was bloodless, and of its usual consistence. The aorta contained fluid blood. The lungs were rosy and crepitating. The mucous membrane of the œsophagus frequently showed little papillæ, surmounted here and there with a white point, like a minute grain of sand, adhering to the centre of the papilla. The crop always contained food; the gizzard was strongly contracted; the intestine presented occasional reddish patches, especially in the situations where little parcels of worms were found. The liver was gorged with black and tarry blood; the gall-bladder distended with thick green bile.

This epizootic is quite different from the "*maladie charbonneuse*" of Chabert, and from that described by Boronio. Neither has it any analogy to the "pip," for the tongue was always in a natural state.—*Journal Hebdomadaire.*

AMERICAN INTELLIGENCE.

Case in which a Large Dose of Camphor was Taken.—By G. Eickhorn, M. D. (Communicated in a letter to Dr. Hays.)—I have read this morning in the sixth volume of your Journal, page 236, a notice of a case in which a large dose of camphor had been taken, and as I have had an opportunity of experiencing in my own person the effects of such a dose of that article, and as the results in my case differed in many respects from the one you have noticed, a narrative of the symptoms I experienced may not be uninteresting.

In 1817, during the wet month of November, (in Germany,) I was attacked with cold in the head and a severe cough. One evening I took a lump of camphor, about the size of my thumb, and rubbed it down with sugar, with the intention of taking a little of it occasionally, and left it in the mortar covered with a sheet of paper; it was about 6 o'clock, I sat alone, and being unable to read, because my eyes were swimming in tears, time passed very tediously, and I therefore took without reflection, from time to time, a tea-spoonful from under the cover without lifting it, till about 9 o'clock, when I perceived the mortar almost empty; I had taken at least two-thirds of the whole. The idea then rushed to my mind that I had perhaps poisoned myself; but as I did not feel any ill effects, I resolved to wait till such symptoms should ensue as might call for interference. I accordingly went to bed, taking with me laudanum and diluted sulphuric acid. I had not been half an hour in bed before I began to feel warmer and warmer, till I experienced a burning heat, and at the same time my heart throbbed more and more frequently till it was impossible to count the pulse, but unattended with any uneasiness in the head. I never felt better; never were my ideas more lively or clearer; it appeared as if my intellectual powers were increased, and certainly champaigne never brought on a more pleasing intoxication. In this situation I passed about an hour and a half, or two hours, when my skin began to grow moist; soon after my pulse became slower, and I fell asleep. The next morning I awoke miserably weak, the sweat having penetrated to the lower side of the feather bed, and my shirt and clothes were drenched. My cold and cough were just as the evening before. I took a lump of camphor about the same size, and found it to weigh nearly ʒiij., and supposing the powder left in the mortar to have been the third part, I had taken ʒij. or 120 grains.

The difference between the two cases as to the symptoms, is indeed, great; in the case at Breslau the pulse was hard; in mine this did not occur, and the frequency was so great, that I cannot conceive how the pulse could have become hard; then in the case alluded to, the pulse was full; in mine it was small in accordance with its frequency; there was heaviness of the head; my head felt rather light; anxiety and agitation was experienced in the other instance; I have never felt more exhilarated and comfortable; the individual at Breslau suffered violent heat in the stomach; I did not experience any uneasy sensation in that organ; and as to the senses, I remember only that I could perceive the pulsation of the arteries in the ear, but without any disagreeable sensation. I do not recollect any derangement in the function of the bladder, and therefore suppose there was none. The difference in the symptoms may be accounted for by my having taken the camphor unmixed with any article capable of modifying its effects, whilst by the individual at Breslau the substance was taken dissolved in four ounces of brandy, to which last article I think many of the symptoms are to be ascribed.

New Orleans, March, 1832.

Description of an Instrument for Excision of the Tonsils. By WILLIAM B. FAHNESTOCK, M. D. of Lancaster, Pennsylvania.—This instrument, which I denominate the sector tonsillarum, consists of a piece of steel six inches long, and about one-fifth of an inch in thickness, neatly rounded and polished, with a small hole passing longitudinally through its centre. One end terminates in a ring about one-eighth of an inch in thickness, and one inch in diameter. The ring is split, or divided into two equal parts, which split or division extends one inch down the stem, for the passage of the knife hereafter to be described. There are two projections on the stem, one close to the ring, and the other about three inches below it, through which are small holes for the passage of the needle.

The needle is about four inches in length, and works through the two above-named holes, on a flattened surface on the stem of the instrument.

The knife consists of a flat steel ring, which fits in the split of the above-named ring, with a stem of such dimensions as will pass through the longitudinal hole in the instrument. To the end of this stem is affixed the handle. This will be better understood by reference to the accompanying drawing, which represents the instrument one-third the proper size. For the purpose of exhibiting the different parts, the circular knife is partly drawn down as in cutting, and the needle pushed up some distance.

A, A.—The stem of the sector.

B.—The ring.

C, C.—The projections on the stem, through which are holes for the passage of the needle.

D.—The needle.

E, E.—The circular knife; the internal and upper half of which is sharp.

F.—The stem of the circular knife, to which is affixed the handle.

G.—The handle.

Mode of operating with the sector tonsillarum.—If it be the left tonsil that is to be removed, depress the tongue with the forefinger of the left hand; introduce the sector, pass it over the tongue, with the needle side upwards, and as the tonsil is approached, so turn it, that the needle looks towards the right side of the mouth. Apply the ring over the tonsil, and with the thumb or forefinger of the left hand, pass the needle through the base of the gland. Now incline the stem of the sector a little towards the right side of the mouth, or in a line with the angle of the jaw, and excise.

When the right gland is to be removed, the mode of operating is reversed.

On Large Doses of Quinine in Atmospheric Fevers. By H. PERRINE, M. D. (Extracted from a letter to Wm. P. Dewees, M. D.)—Labouring under the symptoms of *cholerine* on the eve of my expected return to Campeche, I cannot depart from this *stage* or *state* without renewing my testimony of the great virtues of the sulphate of quinine. I commenced the practice of medicine in Illinois, in the fall of 1819, continued it in that state until the spring of 1824, and in the state of Mississippi until the spring of 1826, when I embarked at New Orleans on account of my health for Cuba, and thence proceeded through Boston to Canada during the summer. The following winter was passed in this city. In May, 1827, I sailed for Tobasco, in Mexico, where I remained during the rainy season, and arrived at my consulate in Campeche of Yucatan, in November. I returned thence to Tobasco in July, 1830, and sailed from that port for this city in June, 1831, and in September last was again at Great Sodus bay in this state where I had been a short time in 1826. You will hence perceive that I have

had opportunities for medical observation in various degrees of latitude and longitude between the southern shores of our great lakes and the northern base of our Guatemalian mountains.

During the first six years of my practice I used and recommended with gradually increasing boldness, *large doses* of the Peruvian bark, *frequently repeated* during the *paroxysms of fevers*. My communication in your Journal of November, 1826, contains my first essays with *large doses of the sulphate of quinine*. I have since had abundant opportunities of witnessing their effects in the hands of myself, of other physicians, and of *the people*. In 1827, quinine was first known in Tobasco and Yucatan, and was bought by *physicians* at two shillings a *grain*. I introduced its use in large doses during the febrile paroxysms. In 1831, it was bought by *families* at five dollars an *ounce*. Every person that adopted my practice, has never, I believe, abandoned it. I therefore merely claim common capacity for observation and common veracity for report in submitting very briefly a few general results of my experience.

1. The medium dose of the sulphate of quinine at any period of fever from its incipient to its terminating symptoms is *ten grains* to be repeated every *two hours*, whatever be the state of the pulse and skin.

2. It may be given without interfering with simultaneous antiphlogistic stimulant, or other auxiliary measures according to symptoms, any more than an equal quantity of James' powder. Indeed if the quinine should be slily substituted in the paper, the physician would express his surprise at the immense sudorific and sedative powers of this new pulvis antimonialis.

3. The retreat of fever under the power of quinine as under the power of nature, is indicated by the changes of the hot or the cold skin, and of the strong or the feeble pulse towards their natural condition; and most generally by secretion from the skin, often from the kidneys, occasionally from the bowels, and sometimes from *all three in succession*.

4. The *general* disturbance of the nervous and vascular systems, called febrile, whether cold and depression or heat and excitement be the alarming traits, may be counteracted on the first day by at most six doses, or on the second by a dozen; and thus will be prevented that gastro-enteritis, a *consequence* of endemic or epidemic fever which Broussais has mistaken for the *cause*.

I have hence reason to believe that all malignant fevers, (even if called the *cholera* when their force is attracted to previously disordered bowels,) may be cut short at their commencement by large doses of sulphate of quinine; and that local disorder may at the same time or afterwards be corrected by the same means that were effectual for the same symptoms before the attack.

I am happy to see in Magendie's Formulæ, that large doses of quinine are administered by highly reputable physicians of Europe.

New York, June 26, 1832.

In a subsequent letter dated Princeton, N. J., Sept. 6, 1832, Dr. Perrine writes:—"The suggestion relative to the use of quinine in cholera I have had sufficient opportunities of testing during its prevalence in New Brunswick and Princeton. Dr. Taylor of the former, and Dr. Dunn of the latter place, will afford abundant evidence of its utility in the stage of collapse in union with calomel, for as I was hopeless of inducing others to rely on the quinine alone, I proposed the combination of the first dose with a *large* dose of calomel, say forty grains of calomel and twenty grains of quinine at once, and then twenty grains of quinine every hour afterwards, until pulse, heat, and reäction generally was restored. *No opium*. The secretion from the stomach and bowels were checked almost magically! Laxatives became necessary to move the bowels within twenty-four to forty-eight hours afterwards by those physicians who were anxious on that score, but for my part I was willing to let the patient perspire twenty-four hours and urinate the next twelve, under the conviction that in the ensuing twelve hours a few copious and consistent discharges would naturally occur. Where consecutive fever ensued the treatment had nothing peculiar."

On the Use of Galvanism in Cholera. By L. MUNSELL, M. D. of Frankfort, Kentucky. (Extracted from a letter to Dr. R. La Roche.)—I have lost no part of my *enthusiasm* with regard to the subject of electro-therapeutics, but have continued to speculate and experiment, as opportunities have offered. Recent experience fully confirms the opinions which I formerly entertained, and which were so often and freely communicated to our mutual and much lamented friend, Dr. Brown.

Ever since the reception of your kind letter, it has been my intention, at some convenient season, to embody the result of my experience and views, upon the above-mentioned subject, and submit them to the disposal of yourself and colleagues. An accidental occurrence, a few days ago, in a particular manner, reminded me of that intention; and is the more immediate occasion of my writing to you at the present time. In turning over some medical works at a book store, I casually met with several numbers of the North American Medical and Surgical Journal; and in casting my eyes over the contents of No. XIX, for July, 1830, I discovered an article on "electricity and galvanism," which, upon reading, (on pages 199 and 200,) I recognised to be an extract from one of my own letters to Dr. Brown. I had been in search of something on the *cholera*, which is now the leading topic of the day—and which, I am informed, is now raging in your city.

It has all along been my opinion that galvanism, properly and timely applied, would be one of the most powerful and successful remedies in that frightful disease. The case of Mrs. T. given in the above-mentioned extract, and many similar cases which have lately occurred in my practice, induce me still to entertain that opinion: and, I confess, I felt no small degree of gratification, on reading the following paragraph in the "Genius of Temperance," published at New York, August 1st, 1832, page 1st, column 2d. Dr. Thompson Professor of Chemistry in the University of Glasgow, in an article published in the London Philosophical Magazine, suggests, that "if a current of galvanic electricity were made to pass through the lungs of those who labour under the cholera, it would revive the energy of that organ, and enable it to induce the requisite quantity of blood." Now, as the disease is prevalent in your city, and as all other modes of treatment hitherto adopted have proved unsuccessful in a majority of cases, would it not be well to give galvanism a trial? I presume your hospitals will afford opportunities for extensive and fair experiments; and I feel quite solicitous that they should be made. I regret exceedingly that my situation is such that I cannot, without great inconvenience, make a visit to your city for this express purpose. If, however, you or either of your colleagues, or any of your medical brethren, should think proper to try the experiment, (which, to say the least of it, will be safe and harmless, even if it do no good,) I will detail the process which *I* would pursue, were a favourable opportunity to be presented to me.

In the first place, I think the *construction* of the battery of some importance. I have tried all sizes, from plates of six inches square, to those of one inch; and I find that plates two and a half inches square answer the best for medical purposes. A series of twenty double plates, (zinc and copper, well soldered together at the upper edges,) of that size, carefully cemented into a mahogany trough constructed on the plan of Cruikshank's, and mounted according to Dr. Hare's improvement, as described in Mitchell's edition of Faraday's chemical manipulation, page 484, (note,) forms a convenient battery for ordinary use, and will be found sufficiently powerful to be borne by most patients. It would be well, however, to construct the trough for a series of thirty or forty pairs of such plates, as it may be necessary, in some cases, to increase the power to that extent. The space between each pair of plates ought to be at least half an inch, otherwise the acid mixture for charging will be too soon exhausted of its strength. Great care should be taken that the cementing be *perfect*. I have been in the habit of using a cement made of five parts of rosin, four of bees-wax, and two of pulverized red ochre, and pouring it while hot into the troughs,

after the plates have been carefully arranged and fixed in the grooves; so that the sides and bottom of the trough between each pair of plates may be completely covered with the cement about one line in thickness; thereby securing a perfect insulation of each pair of plates. In each extreme cell, also, the wood should be completely covered with the cement. After the cementing is finished, the troughs should be well varnished with two or three coats of good copal varnish. Small silver wires, three or four feet long, for conductors, may be prepared by attaching a leaden ounce-ball to one end, so that it may readily sink in the cells and keep its place; and the other end may be armed, (to insulate it for holding between the fingers,) with a tube made of a large goose-quill by cutting off the ends, fitting a piece of cork into each, and then thrusting the wire through them so that the end will project about one inch: or some of the melted cement may be poured into the quills to secure the wires in the centre, instead of the corks. Two thin, circular plates of silver, about the size of a dollar, with six or eight small holes perforated near the margin for the purpose of sewing on some thick woollen cloth, or a flat piece of sponge, should next be prepared. The battery may then be filled, to within half an inch of the tops of the plates, with a mixture of muriatic acid and water in the proportion of one part of the former to fifteen or twenty of the latter. I have found this mixture preferable to any other for medical purposes.

Thus provided, when called to a patient with the cholera, I would apply one of the silver plates to the nape of the neck, and the other to the pit of the stomach; the cloth or sponge on both plates being previously well moistened with the acid mixture for charging the battery. This moistening of the plates with the acid mixture is very important to be attended to, as an action on the skin is thereby produced which gives a ready passage to the galvanic influence. I would then bring the armed ends of the wires, (the other ends being plunged in the cells of the trough at such distance apart as to produce the desired intensity of action,) in contact with the plates, and maintain as strong an application, for eight or ten minutes, as the patient could bear without complaining. Sometimes the positive, and sometimes the negative wire will produce the most pungent sensation: I would occasionally reverse them, so that the strongest sensation should be felt at the pit of the stomach, or in whatever part the pain might be most severe. If the pain and spasm should extend over the whole region of the abdomen, I would occasionally let one plate remain on the pit of the stomach, and shift the other to various parts of the abdomen where the pain might be severest: or, perhaps, a large plate fitted to the whole region of the stomach and bowels, (lined with cloth or sponge and well moistened as before directed,) might answer the best purpose. In the meantime, the internal administration of spts. ammoniæ and æth. sulph. in doses of fifteen or twenty drops of the former, and a tea-spoonful of the latter every half hour, might be a useful auxiliary: this, however, to be left to the judgment of the attending physician.

I feel very desirous that a fair experiment should be made with the galvanic battery, in a decided and well-marked case of the cholera: and you will confer a singular favour on me, (and perhaps on some patient,) by having such an experiment instituted, and letting me hear the result as soon as convenient.

Frankfort, Kentucky, August 15th, 1832.

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Case of Cholera Infantum cured by Lunar Caustic. By Joseph C. Skinner, M. D. (Communicated in a letter to Dr. Darrach.)—My daughter Cornelia, aged seventeen months, was attacked about the middle of June, 1829, with the usual symptoms of cholera infantum, the most prominent of which were the following; occasional vomiting, particularly when any fluid was taken in the stomach; the matter ejected was sometimes tinctured with bile, but more commonly it was merely the fluid taken in the stomach; the bowels were exceedingly irritable, the evacuations copious, frequent, and very offensive; sometimes of a clay colour, at other times resembling coagulated milk; fever of a remittent form; skin

hot and dry, &c. These symptoms commenced gradually and increased in severity daily until they became alarming. On examination of the mouth, I found the gums tumefied and four molares making their way through, which was believed to be the exciting cause of the train of symptoms which I have described.

In the treatment of the case my first object was to remove all sources of irritation; accordingly the gums were freely scarified, and the bowels well purged with calomel and calcined magnesia and injections of common salt and warm water. This practice was steadily adhered to for several days, but failing to produce the desired effect, and symptoms of prostration fast approaching, the pulse indicating a great degree of debility, and the fever assuming a more decided remittent type, indicating the influence of miasmata, I deemed it necessary to resort to tonics and stimulants; accordingly I gave the patient half a grain of sulphate of quinine, with three grains of prepared chalk every two hours, and the sixth of a grain of opium every twelve hours, occasionally using an injection of melted fresh butter when the bowels were painful, a practice which had been remarkably successful in my hands in similar cases. In a few days I had the pleasure to witness the happy results; the patient seemed nearly convalescent, but owing to the extreme hot weather and some little error in diet, the disease returned and very shortly assumed a chronic form. The same treatment was pursued with the addition of brandy and port wine, but with little or no effect. The disease gradually advanced, the patient became more and more emaciated, and all the symptoms more aggravated, until about the 10th of September, when her situation became exceedingly alarming. The bowels were exceedingly irritable, the skin hot and dry, the tongue thickly incrusted with a whitish fur, the thirst insatiable, eyes thrown back, and apparently insensible, a profound stupor supervened and the mouth kept steadily open. On examining the evacuations from the bowels I discovered small portions of what I believed to be the internal coat of the intestines. In this state of things my hopes all vanished, and was about to give up my little daughter in the hands of its Creator, but recollecting the utility of lunar caustic, (nitrate of silver,) in severe cases of aphthæ, I determined to give it a trial in this case; accordingly I dissolved one grain in a tea-spoonful of the mucilage of gum arabic, and gave her one every four hours; after she had taken three portions I perceived the most happy effects about to take place, which inspired me with confidence in the remedy and a consequent determination to persevere, gradually increasing the dose and giving it at shorter intervals. The symptoms now began to abate, sensibility began to be restored, and every circumstance of the case seemed to promise a speedy convalescence. On the third day from the commencement of the caustic I discontinued it, and from that time the patient rapidly recovered upon a plentiful diet of poultry and sweet potatoes, and now she is a healthy and thrifty child.

Hertford, N. C. June 20th, 1832.

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Case of General Dropsy. By Charles C. Hildreth, M. D. of Marietta, Ohio. —Betsy King, a strong, robust, hard labouring woman, about fifty years of age; began to complain of difficulty of breathing, and enlargement of her lower extremities, a few days after falling into a stream of water.

These symptoms had been gradually getting worse for about six weeks previous to my seeing her, occasionally yielding partially to evacuants, digitalis, &c. which had been prescribed for her by other physicians. When first called to see her, I found her sitting in an arm chair, which she had not been able to leave for some time previous, breathing laborious, slightly asthmatic, and crepitant; complains of great weight and oppression in the chest; dry and troublesome cough, and deficient expectoration. To these symptoms were added an almost total suppression of urine, and slight mental alienation.

Her lower extremities were distended almost to bursting; slight vesications

had already appeared, indicating an effort of nature to diminish the distention. The skin felt cold to the touch, hard, and resisting to pressure.

So great to me appeared the cellular infiltration, that to satisfy my curiosity and avoid exaggeration, I took the trouble to measure it; this I did by applying a string around the bellies of the gastrocnemii muscles; which again applying to a scale I found to measure very nearly twenty-six inches.

Her pulse was full, hard, and tense, evidently indicating venesection, to which operation she however refused to submit, urging her feelings of weakness and the severity of the preceding course of treatment.

Thinking perhaps her sanguiferous system might be sufficiently reduced by active hydrogogue cathartics, &c. to render the absorbent system sufficiently active, I commenced the treatment by the following prescription:—℞. Sup. tart. potass. ʒii.; Pulv. jalappæ, ʒi.; Nit. potass. ʒi.; Gambogiæ, gr. vi. Of this compound, one tea-spoonful proved sufficient to procure five or six copious, fluid alvine dejections daily. To remove any visceral engorgement that might exist; and stimulate the kidneys to more active secretion, I gave her a pill morning and evening, of calomel and squills, āā. one grain. This prescription was continued until a slight ptyalism was induced, which was perceptible about the fifth or sixth day. Seeing no diuretic effect for the first few days from the nitre and squills, I ordered her a decoction of the common garden parsley, and some other diuretics from the woods, in old cider, to be taken pretty freely; this almost immediately occasioned a profuse secretion of urine, the patient discharging several quarts daily.

To promote expectoration and relieve her asthmatic breathing, I gave her Coxe's hive syrup, combined with a saturated tincture of lobelia inflata.

From this mixture, together with the cathartic and diuretic, she soon experienced great relief in respiration. To diminish the enormous distention of her lower extremities the more rapidly, I made with a spring lancet several punctures through the integuments and cellular membrane extending them down from near the head of the tibia, on either side, towards its lower extremity.

These gave exit to large quantities of water; keeping up a constant dripping from the same, till the flannel swathe about her extremities, her shoes, and the carpet breadth, were quite wet with the effusion.

By repeating these punctures, and continuing the above prescriptions about a week; the dropsical affection was entirely removed. Leaving her extremities shrunk to their natural size, and the skin slightly corrugated from increased tone. Her hydrothorax seemed also entirely removed; her cough and oppression having left her; and the patient being able to lie down and sleep without any difficulty of respiration. A slight ascites which had been forming but a few days, but which had been rapidly increasing, was by the same means checked and dissipated, leaving her entirely free from all dropsical effusion.

A liberal exhibition of tonics completed the cure.

Marietta, August 28th, 1832.

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On the German, or Camphor Treatment of Cholera Asphyxia. By William Channing, M. D. of New York.—The following comprehensive directions, intended to meet, in some degree, the exigencies of those who desire information relative to the use of camphor in the treatment of cholera, are essentially a summary of the practice of several physicians of New York, and now sanctioned by their experience in more than six hundred cases, many of them of the most malignant character. If they shall prove instrumental in lessening the destruction attending the pestilence now ravaging our country, the writer's design will have been answered.

It is necessary to premise, that in specifying measures *generally efficacious* in cases as they have arisen, it is hardly possible, in a single sheet, even to touch upon the principles upon which the practice is founded; and still less to enumerate the various circumstances of age, sex, constitution, &c. of the patient,

and the diversified phenomena of the disease, that, as in other diseases, require correspondent modifications of the treatment—modifications which it is manifest, must be left to the professional *tact* of the intelligent physician.

Another remark too important to be overlooked is, that there have already been observed no less than six different forms of epidemic cholera, each having its characteristic features, and each its appropriate treatment. Several of these may prevail, according to laws not ascertained, during the same season, in different countries or districts, as noted in Europe in its late desolating progress.

It must therefore be explicitly understood that the practice here set forth is designed only for an epidemic exhibiting the same distinctive features as have marked the footsteps of cholera in this city; and that, in such an epidemic, cases may be expected in which the *literal adherence* to directions *necessarily general*, may prove pernicious and even fatal. Moreover, it must be constantly borne in mind, that, throughout the several stages of this disease, from the first premonitory symptoms to confirmed convalescence, it is essential to the success of the camphor treatment, that the *patient be free from the counter influence of other medicinal agents;** and that, of all others, none is so utterly opposed to its efficacy, none so fatal to every hope of a favourable issue, as *opium in every form* in which it is administered.

To avoid repetition, it is thought expedient to present the treatment of the several stages of cholera in a reversed order, commencing with that in which its appalling symptoms are most strikingly developed.

The stage of asphyxia.—In this stage, if the collapse shall have long existed, or if the march of the disease shall have been unusually rapid, the evacuations so excessive that the patient appears nearly exsanguinated, the pulsations of the carotids and of the heart remarkably feeble and the respiration very laborious—but little hope can be indulged under any treatment. Such patients, however, have in some instances been resuscitated by the judicious exhibition of camphor—the doses being diminished to about one-fourth part, and repeated every three, four, or five minutes, and the other measures hereafter detailed faithfully enforced. But the majority of collapsed patients, when first seen by the physician, happily have not yet sunk to the above discouraging condition; and though the pulse at the wrists shall have ceased, the extremities and face shall be blue and shrivelled, and with the tongue and breath, evince no vital heat, if there be ordinary constitutional stamina, it is in such cases that the camphor treatment exhibits most convincingly its *specific* powers; for in such cases, if experience be the test, it is entitled to a confidence that can be claimed by no other yet promulgated.

1st. The patient should be immediately undressed and well covered in bed, and woollen stockings placed upon his hands and feet. 2d. Three drops of the spirit of camphor† in a table-spoonful of water, or (what is equivalent and of more convenient administration) a table-spoonful of camphor mixture‡ should be forthwith administered, and repeated every fifteen minutes. 3d. An injection warm as can be borne of the camphor mixture somewhat less than half a pint, every half hour, or oftener if not retained. 4th. The abdomen and chest should be covered with flannel wet with camphor spirit—the limbs above the stockings rubbed with it, and the bed-clothes about the patient's head so sprinkled with it that camphor may be inhaled with every breath. 5th. The extreme thirst should be allayed with a table-spoonful of cold water, or pure brandy and water *very weak*, as the patient may prefer, every five or ten minutes.

These measures should be unremitting until pulse and warmth be restored to

* This remark requires the qualification that there are cases of occasional occurrences, in which according to circumstances to be recognised only by the skilful physician, *cuprum, veratrum, rhus* and *bryonia*, are called for and exhibited with the greatest advantage.

† The spirit of camphor referred to is that of the L. and D. P. or camphor (2 oz.) two ounces, dissolved in alcohol a pint.

‡ The camphor mixture may be extemporaneously prepared by adding to a common black bottleful of warm water three tea-spoonfuls of the spirit, to be shaken for a few minutes, then strained through a coarse napkin to remove the undissolved camphor.

the extremities, when the injections, (and the frictions, if no cramps be present,) may he discontinued. The *full dose* of camphor must be maintained until free perspiration becomes general, and the evacuations comparatively infrequent; then they are to be promptly reduced to *one drop* of the spirit, or *a tea-spoonful* of the mixture. So soon as the evacuations are small and rare, and begin to evince a bilious tinge, (as is often the case at an early period,) the *intervals* should be extended to twenty, thirty, or sixty minutes according to the degree of heat and perspiration, and thus continued until the watery discharges shall have wholly ceased. After this occurrence, most patients require the repetition of the one drop every two or three hours; but in some, this small dose, once in four, six, and even twelve hours, proves abundant for the continuance of active perspiration, while *the hazard of over excitement and depressing narcosis* is thus with ease avoided.

The sweating process in this manner, fully though cautiously sustained, is to be pursued in collapsed cases at least thirty-six hours, every exposure which may arrest its salutary influence being carefully avoided. In the course of it, the insatiable thirst gradually ceases, and the patient, after a little light nourishment two or three times, generally will relish, and in moderation, will take with great advantage, every three or six hours, beef-steak, mutton-chop, or boiled chicken, with good stale wheat bread; and for drink, brandy and water, and pure Port or Sherry wine. These articles should constitute the principal diet of the convalescent, whose *decidedly expressed wants*, as the utterings of nature not to be disregarded, should be indulged, yet with great temperance. Experience has amply shown, that by management so simple, convalescents, after severe attacks of cholera, may, with very few exceptions, be safely conducted through its consecutive dangers to confirmed health; always however, (peculiarly predisposed, as they must be in their debilitated state, to renewed attacks,) requiring the reïterated admonitions of their physician to unceasing vigilance.

The cramp or spasmodic stage.—This stage ordinarily precedes that of collapse, in many instances runs into it, and like it, is often accompanied by profuse evacuations, fits of vomiting, cold extremities, &c. If the sufferings be very severe, and collapse threatened, it calls for treatment as active as that just detailed, the frictions being vigorously applied to the seat of the cramps. If vomiting be a predominant symptom, the præcordia should be rubbed with the camphor spirit, and only *one drop* in a tea-spoonful of water administered every three or five minutes; if repeatedly rejected let a like quantity be diffused through three, six, or even ten times the water, and given by the tea-spoonful till a larger dose shall be retained. By this mode of exhibition, camphor never fails to overcome the most violent vomiting occurring under this epidemic, after which no difficulty exists in pursuing the course directed in the stage of asphyxia. In case the attack be of a milder nature, warm perspiration will speedily appear, and the symptoms vanish under treatment less active.

The premonitory stage.—It is generally indicated by one or more of the following symptoms—lassitude, ringing in the ears, chilliness, uneasiness or soreness in the region of the stomach, nausea, occasional vomitings, costiveness, diarrhœa, pain in the bowels, slight cramps, particularly in the fingers and toes, &c. Unless severe in the outset, or too long neglected, the patient will rarely find it necessary to leave his ordinary avocations, though in cool or damp weather he may require an extra garment. To obviate costiveness, a mild injection, daily if required, is the safest means to be used when the bowels are so easily irritated into violent diarrhœa, as during the prevalence of cholera. If *any laxative be taken*, castor oil, in the dose of a tea-spoonful, with three drops of camphor spirit, repeated in an hour or two if it fail to operate, is to be preferred. In reference to the other symptoms of this stage, the same dose of camphor, repeated if requisite in an hour, or if they be urgent in half an hour, or a quarter even, will almost invariably arrest any, and all of them. Should they however obstinately persist, the patient must submit to the inconvenience of a free perspiration in bed for a few hours. The importance of *promptly* ap-

plying the remedy for the symptoms of this stage, and thus nipping the disease in its bud, cannot be too strenuously urged upon every individual exposed to this epidemic.

The practice above designated, can hardly be more at variance with any of the prevailing views of medical men, than with those entertained, but a brief period since, by the writer himself. In this age of generalizing, he had been led to doubt the existence of a *specific* for any disease. Experience, the only unerring guide, has convinced him of an error that has but too many adherents, and to propagate its correction, is but justly due to the interests of sound philosophical medicine.

To have imagined that the introduction of camphor as a specific for a disease so formidable as cholera, would escape an opposition as violent, if not so formidable, had argued gross ignorance of the history of improvement in every department of human knowledge. He who is aware that in enlightened Europe the virtues of ipecacuanha and Peruvian bark remain untested, and the unequalled blessings of the potato unappreciated, until the stamp of *royal* patronage opened the eyes of the blind, can scarcely feel surprise at what he witnesses in the present instance.

But facts are daily accumulating, which, as they become known, must carry conviction to every understanding accessible to truth. To such—to *such alone*, the writer would appeal for an impartial trial of the practice he would promulgate. And he makes this appeal with the most unwavering confidence, (a confidence resting upon an extensive knowledge of facts in private and in public practice,) that such a trial cannot fail to demonstrate the preëminent simplicity, safety, and certainty of the camphor treatment of cholera asphyxia, as well as the acumen of German research which first devised it.

New York, August 30th, 1832.

As an appendix to this publication, the writer deems it an act of justice to state, that while most of the indications above specified have been the result of experience here, yet the use of camphor, as a remedy for cholera, with the general principles of its exhibition, originated in Germany, and for its promulgation the American public are principally indebted to his friend, Dr. H. B. Gram, of this city.

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Report on the Epidemic Cholera lately prevalent in the Maryland Penitentiary. By H. Willis Baxley, M. D. Physician to the Institution. (To the President and Directors of the Maryland Penitentiary.) In submitting the hospital reports for the past and present months, it is proper to make some reference to the cause of the unusual mortality with which the prisoners were visited during the former period. By referring to the hospital record it will be perceived that two cases of malignant cholera were reported in the month of June, previous to the official announcement of the disease in New York, and four in July. It was not until the 13th of August however, that the disease made its onset in the more dreaded character of an epidemic. On that day two persons were attacked, and nearly every succeeding day added new subjects to the list until the 14th of September, since which time no case has occurred. No convict had been committed to the penitentiary since the 3d of July; on that day a woman was received from Somerset county, where the disease was not then in existence. The disease first appeared among the men.

At the commencement of the epidemic several persons sunk suddenly into fatal collapse who acknowledged the preëxistence and neglect of diarrhœa; and yet, with these examples of speedy mortality among them, there were found others who carefully concealed the premonitory symptoms of the disease, until the development of the stage of asphyxia gave evidence of its existence. This fact led to the early adoption of a strict system of medical police, and by constant investigation into the state of health of the prisoners, many were found labouring under incipient symptoms, whom carelessness, prejudice or self-con-

fidence, would have led to a reckless sacrifice of life. It was observed that those whose digestive organs had been impaired to the greatest extent by previous irregularities, excesses, and habits of intemperance, were most obnoxious to the disease. Nor is it surprising that such a large proportion as one-half of the inmates of this establishment should have suffered from the influence of the morbific cause, when we consider that within the walls of no other institution, except those of an Alms-house, is there an assemblage of persons so remarkable for previous habits of depravity and licentiousness. In most cases habitual intemperance was found to have destroyed the capacity of resistance afforded by a healthful organic structure, and the first opposition having been overcome, little was left for the epidemic to accomplish in the production of more active disease.

To obviate as much as possible the evil effects of known existing causes, the efficient police of the institution was increased, and redoubled watchfulness was exercised to prevent the use of other articles of diet than those allowed, which were selected with entire reference to their wholesome properties. The number of meals was also increased, which rendered it unnecessary for the prisoners to take any portion of their allowance from table, which was strictly forbidden, and its enforcement had a salutary effect, not only in preventing dangerous excesses in some, and equally dangerous inanition in others of the healthy, consequent upon the otherwise uncontrollable practice of provision trading, but in securing the uninterrupted improvement of convalescents, many of whom had relapsed, and several died, from the effects of surfeit. The provisions consisted of tea sweetened with sugar, wheat bread and herrings, for breakfast. Bread and tea for supper. For dinner, beef and beef soup, or pork, bread, rice and potatoes.

In addition to the dietetic measures adopted for the preservation of health, others were resorted to. Personal cleanliness was enforced by the use of baths —the prisoners were clad in comfortable woollen clothing—extra bedding was allowed—the usual labour was not exacted—and every means of cleanliness and purification, both in the workshops and cells, were had recourse to that prudence could suggest. The cholera was in nearly every instance preceded by symptoms of greater or less duration, and more or less violence, indicative of disorder in the healthful functions of the stomach and bowels. Abdominal tenderness, soreness, pain, or simply a sense of uneasiness or distention; præcordial anxiety and oppression; a sense of burning, and frequently a rumbling of the bowels, as patients have often expressed it; perhaps lassitude and dizziness; any one or more of these with diarrhœa, with or without nausea and vomiting, existing sometimes for days, sometimes for a few hours only, constituted the most usual precursors of an attack. It is this stage of the disease that has received the name "cholerine," a term implying a less aggravated degree of pathological condition, constantly tending, and almost invariably terminating, in a most malignant and unmanageable form of disease, when neglected. The production of more or less violent symptoms, is not incompatible with the operation of the same powerful morbific agent, exercising its influence upon differently susceptible constitutions, and under a variety of modifying circumstances and exciting causes. Unless this be admitted we cannot account for the universal prevalence of gastro-intestinal disorders of a milder type constantly attendant upon the cholera in this country, and emphatically spoken of in the valuable documents of Drs. Rhinelander and De Kay of New York, and in the able report of Professor Jackson and Drs. Meigs and Harlan of Philadelphia.

No difficulty was found in controlling the disease before it had passed the limit above described. The texture invaded was evidently the mucous membrane of the stomach and bowels; and the pathological condition consequent upon the first impression of the cause was one of irritation. To meet the indications pointed out by this state of the organs, the following measures were adapted.—A strict avoidance of all aggravating causes of irritation; the use of diluent drinks, barley, rice, and elm water—also diluted lime water; diet of

boiled milk, mutton broth, rice, tea, and stale wheat bread; the promotion of external warmth; the use of revulsive agents; principally friction; and entire rest by confinement to bed. These measures generally sufficed to remove the less violent symptoms. For the aggravated conditions, more energetic treatment was required, and on many occasions, venesection or cupping, was found absolutely essential to arrest the more active developments of incipient inflammation. One or both of these, with the salt and water emetic, especially to remove foreign substances, followed by calomel and pil. hydrarg. with or without rhubarb, opium, acet. morphia, or pulv. Doveri, ol. ricini with black drop, laudanum, or denarcotized tinct. of opium—the effervescing draught, sinapisms, and aromatic anodyne poultices, prescribed to suit the peculiarities of each case, were found sufficient in all cases to fulfil the indications of cure; not one, of more than one hundred patients who were subjected to this treatment, having sunk into collapse.

On the neglect of the before described *premonitions* of cholera, other symptoms of a far more formidable character were developed: in some few instances indeed, the first open manifestations of disease were a copious evacuation from the bowels, sudden prostration, and instantaneous collapse; the concentration of the cause, or the constitutional susceptibility of the patients being such, that they seemed struck dead at once. This sudden invasion of the disease occurred in but nine instances; a small proportion of the great number of cases which sustain the law of its gradual and less alarming attack, and in most of these, there had been long standing chronic diseases of the digestive canal consequent upon previous habitual abuses.

The symptoms of the more advanced stage of the disease were nausea and vomiting of a serous or rice water fluid, sometimes bearing a close resemblance to whey, soap-suds, or gruel, and generally containing albuminous looking flocculi. Frequent and copious dejections of a similar fluid, in some instances more than two gallons having been discharged in a few hours. Spasms of the stomach and bowels; great tenderness and heat of the epigastrium; cramps of the extremities usually commencing at the feet and seizing the upper parts of the limbs in succession; enfeebled circulation; pulse small, weak, and sometimes frequent, at others as slow as 40 to the minute; secretions arrested, no urine, bile, nor tears; features contracted, eyes sunk and surrounded with a dark areola; skin of fingers, toes, hands and feet shrivelled, and of a livid hue; tongue and general surface cold, and often exhibiting a tendency to discoloration indicative of cutaneous exudation and retreat of the more fluid parts of the blood, and stagnation of the remaining portion. This latter appearance in general marked the stage of confirmed collapse. The brain was unaffected, or only remarkable for diminished energy; a huskiness or peculiar hoarse whispering tone of voice, sense of suffocation, intolerant thirst, incessant tossing, and complaint of burning heat, even when the body was icy cold, also characterized this stage. The aggression of most of the above symptoms constituted what may be termed *incipient collapse;* an aggravation of these, a cessation of some and a development of others, consequent upon a greater enervation of the ganglionic system; a more enfeebled circulation, and a deeper involvement of various organs, constituted the stage of *extreme collapse*, or *confirmed asphyxia*, which has been justly considered the dying stage.

The treatment adopted to arrest the passage of the disease from the incipient to the fatal collapse, was founded upon what was believed to be the true pathological condition, about which there can be no doubt, whatever mystery may overhang the character and operation of the remote cause. This condition, as before intimated, is primarily one of irritation of the gastro-intestinal mucous membrane, resulting in inflammation and congestion, with consequent debilitating evactuations, deranged nervous sensibility, enfeebled circulation, suspended secretions, and universal disturbance of the various functions connected with the sympathetic system of nerves. This respondent disorder of the various organs might be reasonably expected, when we consider the extent of the

morbific impression, upon a surface of relation greater than the whole external surface of the body—nor was the blanched appearance of this membrane, as discovered sometimes on autopsic examination, any proof of the previous absence of inflammation; this appearance was found only when there had been excessive serous discharges, by which the vessels were relieved. The indications of treatment were clear, and of the agents used for their fulfilment, bloodletting and cupping were of the first importance. These exercised a peculiar power in subduing irritation, removing congestion, arresting exhausting discharges, and unlocking the oppressed circulation; in many instances a contracted and feeble pulse becoming full, open, and more resistant, and the vomiting entirely ceasing under their use; and such was the salutary influence of the cups in relieving gastric oppression and spasm, that the patients often begged "for God's sake to let them stay on." It may be proper to state that of sixty cases of fully formed cholera with whom either venesection or cupping, sometimes both, were used, seven died. Of eighteen who were neither bled nor cupped, nine died. Next to sanguineous depletion should be mentioned the saline emetic, sometimes combined with mustard, especially in cases of great insensibility and prostration; in some such cases the use of this remedy was attended with the effect of rousing the sluggish circulation, congestion was removed, reaction established, and blood-letting resorted to with happy results. On most occasions it was found a valuable adjuvant, and appeared to exert an influence independent of mechanical operation. Cutaneous action was diligently promoted by the application of dry heat, the vapour bath, and various external irritants—nor can I omit to refer to the benefit often derived from large poultices of hops or chamomile, or meal wet with strong hop water, frequently applied warm to the abdomen.

In aid of other means, calomel to reëstablish suspended secretions combined with camphor, small proportions of opium or acet. morphia, at first in a dose of fifteen or twenty grains, subsequently in smaller quantities frequently repeated, was made use of. Sulph. of quinine and acet. plumb. æther, aromatic spts. of ammon., spts. Mendereri, brandy; also enemata of decoction of oak bark, solution of alum, kino, and opiates, were resorted to with advantage as the indications of treatment required. Other remedies recommended on respectable authority were used in a few instances, particularly stim. mercurial frictions and venous injections; these were not found to sustain the high character attached to them by a few persons abroad. Our principal reliance was placed upon the treatment more particularly detailed, the success of which and a sound pathology, forbidding an indulgence in random practice—and much was dependent upon the promptness, energy, and unremitting attention, with which the prescriptions were executed.

In concluding this exposition, which it has been due to the occasion to submit, I must bear testimony to the unceasing efforts of your superintendent and the other officers of the institution, (not one of whom contracted the disease,) in endeavouring to mitigate the devastations of this awful pestilence. Nor can I allow the opportunity to pass, without expressing my personal acknowledgments to my intelligent young friend, Mr. J. B. Owens, for his zealous aid in promoting the same humane object.

Baltimore, October 18th, 1832.

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Letter on the Epidemic Cholera of Albany, addressed to Thomas Spencer, M. D. President of the Medical Society of the State of New York. By JAMES M'NAUGHTON, M. D. of Albany, N. Y.—DEAR SIR,—Your letter of the 6th has been duly received, but the press of professional engagements has been so great, as to have put it ought of my power to answer it sooner. Even now, I am indebted to a fit of sickness, which has, for the last two days, confined me to the house, for leisure to reply to your inquiries. My reply must be brief, as my strength will not permit me to enter into much detail. Besides, all that I have to say, can be compressed into a very small compass.

1st. Cholera has, in every instance that has come to my knowledge, in this city, been preceded by more or less indisposition. The *first* symptom that attracts my notice is, *a white slimy tongue;* and I consider the danger of an immediate attack more or less urgent according to its degree. When this is *well-marked,* there is *usually* a diminution of appetite, and generally occasional qualmishness of stomach. The eye has not its wonted brightness, nor the countenance its usual animation. The hand in this stage will be found warm, and the pulse quickened. This state may continue for some days, and eventually, in a good constitution, go off without the occurrence of any more serious indisposition. But in other instances, the above-mentioned symptoms are followed by head-ache, sickness at stomach, and diarrhœa. The head-ache and sickness may be slight, but in a vast majority of cases a severe attack of cholera is preceded by well-marked diarrhœa. I have not known a single instance in which it was altogether wanting;—but it is proper to state, that in some fatal cases it was slight, and of short duration.

2d. I know of no circumstance which distinguishes the diarrhœa which precedes the cholera from ordinary diarrhœa, unless it be the *total absence* of biliary secretion in the discharges. Bile, I believe, is *never present* in the discharges preceding an attack of malignant cholera. If bile be found in the dejections, the cholera will be of the common kind, should it follow a diarrhœa.

3d. I am of opinion "that the epidemic ought to be regarded as an aggravated form of the common cholera." We find it prevailing in different degrees in the same family, or neighbourhood. One may have it in its most severe form, another may have a slight common cholera; a third may have only a diarrhœa, while a fourth has only a white tongue and a slight loss of appetite. I have known this to have happened in more than one instance. The same general and local cases are modified by constitution, and divers other circumstances, so as to produce different effects in different individuals. The causes, whether atmospheric or telluric, or both, which give the cholera this season an epidemic character, are sufficient to account for its greater fatality, as well as for its more general prevalence. I do not think that there is enough in the fatality or character of the disease, to justify us in regarding it as *essentially different* from common cholera morbus, or as originating from a specific cause. The epidemic was much more destructive in Asia than it has been in Europe: and in Canada it has been more virulent than in the United States. But still we are not to suppose because it varies in its character and in its severity, that it is not one and the same disease, influenced and modified by circumstances. Where it is mild, we may infer that the predisposing and exciting causes do not exist in an intense degree—where virulent, we infer the contrary. It is just so of other epidemics. One season scarlet fever is mild, and few fall victims to it; another, its course is marked by desolating havoc in families and neighbourhoods. The disease, notwithstanding, is one and the same, differing only in degree. So with measles, and so with many other diseases I might mention.

4th. It originated in this city among the resident inhabitants, and we have no reason to attribute its commencement to intercourse with Canada. During the latter part of June, bowel complaints and common cholera became frequent. On the 3d of July, two fatal cases occurred at distant points in the city, but both near the river.

In a vast majority of cases, the disease has attacked persons who had no intercourse with the sick; but truth demands I should acknowledge that when a case has occurred in a family or house, others in the same house or vicinity have been attacked too often to be fortuitous occurrences. Whether a person labouring under the disease is capable of communicating it to another living in a healthy place, and not particularly predisposed, I am unable to determine; but I think there can be no doubt but that persons living in the same house with the sick, or attending upon them, are more liable to be attacked than others. Such persons are exposed to the same causes which produced the first attack. In addition to which, they are disturbed in their minds and in their rest—

exposed to fatigue and to the exhalations arising from the body of the patient—all circumstances favouring an attack.

It is safe to say, that the disease is not dependent on contagion for its propagation. It spreads as an epidemic, but under particular circumstances may be communicated by contagion. This is true of other epidemic diseases. The measles, hooping-cough, and scarlatina, attack persons who have had no connexion with the sick; but are more apt to attack those who have had intimate intercourse with them.

5th. When cholera does not prove fatal, it degenerates into fever, varying in type according to constitution and circumstances, as well as to the previous medical treatment.

6th. It is not confined to any class of citizens. All are equally susceptible; but its severity and fatality have been much greater among the labouring classes and the poor, than among those in easy circumstances. Very few deaths have occurred in persons in good circumstances, whose habits were correct, and who had previously been healthy.

It has not been confined to any part of the city. It has been as severe on the top of the hill, which is high, dry and sandy, as near the river, where it is low and damp. It seems to be more affected by the circumstances of particular houses, in respect to ventilation, cleanliness, number of inhabitants, &c. than by general circumstances. It is most destructive in small, damp, crowded houses, where there is too often no regard paid to cleanliness, or ventilation, and where the habits of the inmates are frequently dissolute. It has not "picked out drunkards" as much as I anticipated, though where it has fallen upon such, it has fallen, like other diseases, with greater severity.

7th. The two first who died were the only ones that, to my knowledge, have been examined after death in this place. These were dissected by Dr. March. The bodies were blue. The veins of the abdominal viscera congested; omentum and epiploon reddish; *gall-bladder distended with bile; no bile in duodenum;* veins congested; urinary bladder contracted; only as large in one case as a hen's egg; muco-purulent on inside; the same with ureter. These latter appearances were probably unconnected with the disease. *Brain*, serous effusion of pia mater—some in ventricles, and in sheath of spinal marrow. From the nature of the disease, little information is to be looked for from dissections. Nothing but functional disturbance can be expected in so short a time, and congestion of the venous system must necessarily occur, from the phenomena of the disease. The appearances observed in protracted cases are still less to be depended upon in explaining the pathology of the disease. Since the derangements produced are purely functional, probably the best, if not the only true way, of ascertaining the nature of the disease, will be, to study the condition of the several functions, and observe the manner and order in which they become severally disturbed.

The very first morbid change I have been able to detect has been in the tongue. This varies from a shade of white so slight as scarcely to be perceptible, to that in which it is covered with a white slimy coat as thick as a sheet of paper. This coat may exist to a considerable degree without *any loss of appetite*, or complaint on the part of the patient; but when it is well-marked, a slight check of perspiration, or irregularity in diet, will bring on diarrhœa; and should the exciting causes continue to operate until cholera come on, it will be of the worst kind, attended with spasms, and rice water evacuations from the bowels and stomach. Diarrhœa and other premonitory symptoms may not precede cholera more than a few hours, or even a shorter time; but I believe the *white tongue* precedes it invariably for at least twenty-four hours, and often for a week. This index, therefore, affords patients an opportunity of attending to themselves ere it be too late; *for malignant cholera is a disease to be prevented, not cured.*

The functions of the whole mucous membrane of the stomach and intestinal canal seem to be deranged as much as that of the tongue. The bile, though

secreted, does not find its way into the *duodenum*. This may be owing to spasm of the biliary duct, or of the muscular fibres of the *duodenum*, where the duct enters it, or simply to the redundant mucus plugging up its orifice. The digestion must necessarily become disturbed, and a vitiated chyle is in consequence carried into the circulation, to contaminate the mass of fluids, and to disturb all the other functions. It is probable that the same influences, whether atmospheric or telluric, which disturb the functions of the mucous membrane of the digestive apparatus, may at the same time impair the functions of the mucous membrane of the lungs, rendering it less capable of acting on the air respired, and of exerting the necessary influence on the venous blood. Or it may so happen that the application of cold and damp may check the cutaneous transpiration, and affect the mucous membrane of the lungs simultaneously, and constitute the first link in the chain of disordered action, whilst the mucous membrane of the intestinal canal and the vascular system are secondarily affected. If the disease were regularly preceded by a chill and catarrhal symptoms, I would consider the former the ordinary mode of invasion; but inasmuch as these are not well-marked in general, and the disease is insidious, first manifesting itself in the digestive apparatus, it will be best for practical purposes to consider it as originating there, and thence extending its influence to other functions.

8th. *Treatment in different stages.* In the first stage the tongue is white, the pulse accelerated, the digestion impaired, and there is lassitude and warm, dry hands. In this stage repose is required. If the patient can be persuaded that he is sick enough to keep his bed, use diluent drinks, abstain from solid food, the efforts of nature would generally throw it off—provided the stomach and bowels be not oppressed in consequence of irregularity of diet. In the latter case a gentle emetic of ipecac. followed by a dose of castor oil, or magnesia and rhubarb, or calomel and jalap, according to circumstances, I have found very useful. In the commencement of the epidemic I was afraid of using emetics for fear of *bringing on cholera*, as we have been taught to fear by European physicians. In the first stage I now use ipecac. and sulphate of zinc, separately or combined, without hesitation, and generally with the best effects. I generally give them in combination, in the proportion of twenty-five grains or half a drachm of ipecac. to from three to five grains of sulphate of zinc, in a wine-glassful of warm water. It operates speedily, and rarely affects the bowels. A full dose is better than a small one. The emetic determines powerfully to the surface, thereby relieving the internal organs and producing more equable circulation throughout the system. It also rouses the action of the stomach and liver, and adds to the efficacy of the calomel and opium with which I generally follow it, in emulging the biliary ducts. The tartrite of antimony I have not used alone, because it is not so manageable. When it operates freely it is apt to produce sinking, and is, besides, very apt to run off by the bowels, which in this disease is extremely hazardous.

When there is much distress about the chest, with head-ache, a warm hand, and a full pulse, I have found bleeding to a moderate extent exceedingly beneficial. In such cases I am not deterred from using the lancet by the presence of vomiting, if moderate, or even when purging is also present. In several such cases I have found it very useful in relieving both the vomiting and purging. I have not given an emetic in any instance where the latter symptoms were both present, in a severe degree, attended with the characteristic rice water discharges. In such circumstances I think it hazardous to have recourse to emetics.

When head-ache, cramps in the limbs, full pulse, white tongue, and sickness at the stomach are present, I generally bleed, and often give an emetic after bleeding; and follow the latter by ten grains of calomel as soon as the stomach is sufficiently settled to retain it. If diarrhœa be present, I combine half a grain, or a grain of opium with the calomel. This generally restrains the diarrhœa, as well as the disposition to vomit. After an interval of four or five

hours, I direct two drachms of the tart. potassæ, dissolved in a gill of water, or gruel, to be given every two hours, until the calomel be carried off. The calomel usually brings away bilious discharges, and the soluble tartar has an admirable effect in cleansing the tongue and in improving the intestinal secretions. I am indebted to my distinguished friend, Dr. Caldwell, of Montreal, for suggesting to me the use of this invaluable remedy.

In the generality of cases of the above description, when there is merely white tongue and sickness at stomach, with more or less purging, a pill or two of calomel, with half a grain of opium in each, followed by the soluble tartar, will relieve all the symptoms, and speedily restore healthy secretions. In five cases out of six, in the incipient stages, I find no other means necessary, except what relate to diet and regimen.

When called to severer cases—when the hands are cold and moist, the tongue coated and white, cramps in the limbs, and frequent and copious discharges from the stomach and bowels of a fluid resembling rice water, I never bleed, having thought it hurtful in that stage. The great object then is, to check the inordinate discharges. I have found a tea-spoonful of equal parts of sulphuric ether, and laudanum, in half a wine-glass of water, more useful in checking the vomiting than any other remedy. The first dose is usually rejected very soon. In that case I direct its repetition. It seldom happens that more is required. To moderate the evacuations from the bowels, enemas of a tea-spoonful of laudanum in a wine-glassful of starch water, or milk, or gruel, repeated two or three times, at intervals of half an hour if rejected, are extremely beneficial. When the vomiting and purging are checked by these means, the patient often complains of great distress about the region of the stomach. In that case, a pill of one grain of opium and ten of calomel, will be very useful. I have also found the application of a large emollient poultice, as warm as it could be borne, over the stomach and bowels, to give great and speedy relief. The calomel in such cases should, in the course of a few hours, be worked off by the soluble tartar, as before directed. Blisters to the epigastrium are very useful in lessening the irritability of the stomach, which is apt to continue troublesome. They are also useful in lessening the sense of sinking, which is often oppressive.

In the last and worst condition in which we are likely to be called, when the body is blue, the eyes sunken, and the countenance ghastly, the hands cold, and the fingers as if soaked in water, no pulse at the wrist, and a cold, clammy sweat bedewing the surface—much may be tried, but little good can be done. I have as yet seen no recovery from such a state; but there have been several from states nearly approximating to it. It is, however, our duty to persevere while there is life, as there is, at least in this disease, some faint hope of success.

In the stage of extreme collapse there is no vomiting or purging, or much apparent suffering. The patient is restless, and constantly wants cold water, or ice, and should you gratify him in his request, the more you give the more he craves. In this stage the voice is nearly gone, the urinary secretion is suspended, and indeed all other secretions. The sweat appears to be a passive exudation of the serum of the blood, through the pores of the skin. The only functions are a feeble respiration, and a circulation only through the larger vessels, and through the head. Hence it is that the intellect often remains clear, though feeble, to the last.

In the stage of collapse, various stimulating applications are made to the surface; such as frictions with dry flannel, with heated Indian meal, or mustard flour; liniments containing ammonia, camphor, cantharides, nitric acid, &c., bottles of hot water to the feet, hands, pit of the stomach, back, &c. Sinapisms to the chest, bowels, wrists. Internally, some give hot brandy in repeated doses, with or without opium—others give only a small quantity once, and subsequently trust to less doubtful means. I myself use, internally, the aromatic mixture recommended by the Edinburgh Board of Health, in the quantity

of two tea-spoonfuls every half hour for a couple of hours, and afterwards use aqua ammoniæ, or carb. ammonia in form of pills, in doses proportioned to the urgency of the case. Only use opiates to allay irritation, or relieve pain.

In this stage I have found enemas of rice water or arrow root, containing a wine-glassful of hot port or Madeira wine, every half hour or every hour, more useful in sustaining the strength, and in promoting reäction, than all other means. In the few bad cases in which I have had the pleasure of seeing a recovery, I have attributed it chiefly to their influence. It is a mode of *transfusion* more natural, and, let me add, more safe than that by the veins. In this stage I have seen the nitrous oxide used, but with no sensible effect. It produced no excitement or exhilaration. The lungs seemed to be insensible and dead.

9th. I have tried transfusion into the veins in one instance in my private practice. We injected a quart of a solution of common salt and sub-carb. of soda, in the proportion of a drachm of each. It gave temporary relief. It has been tried in three other instances in this city—twice in the Central Hospital, and once in private practice. In all these instances with only temporary relief. In the hospital it certainly protracted life for a day. But still I cannot recommend it as a safe or useful remedy. If used much, it would, I am sure, do more harm than good. It is true, some have recovered upon whom it was performed; it is equally true that some as bad cases have recovered on whom it was not performed. It is an operation which requires some skill in its performance; and it is also necessary to have an air-tight apparatus for the purpose. I think a long glass tube with a stop-cock, such as anatomists use for injecting lymphatics, better than the stomach-pump. By means of this, the foreign fluid can be gradually introduced, and the air be with certainty excluded.

I have not bled but once in the blue stage, and then it was under the impression that the powers of life were oppressed in consequence of the engorgement of the large vessels near the heart. It lessened the blueness, and for a short time relieved the respiration; but when collapse comes on, as it generally does after copious evacuations from the stomach and bowels, I hold bleeding to be inadmissible. The serous part of the blood is already in great part removed, and I cannot conceive that the patient is to be benefited by removing the *crassamentum* also.

I do not know that I can with any benefit extend my remarks further respecting the treatment of cholera. I have given you my general views, and the outline of the plan of treatment I usually pursue. It is unnecessary for me to say, that in this, as in every other disease, the plan of treatment must be adapted to the circumstances of particular cases. Nothing can be more mischievous than to prescribe empirically the same remedies in such a disease as the cholera, without proper attention to the stage, the complications, and the thousand other circumstances which modify, not only the disease, but the effects of remedies. The character of the epidemic also varies in different places, being much more virulent in some than in others; so that the course of treatment which succeeds in one place, may fail in another.

As to preventives, I would recommend the wearing of flannel next the body, to promote and preserve the functions of the skin; to avoid night air and exposure to rain and damp as much as possible, and, particularly, to guard against wet feet. I would not advise any great or sudden change of diet. Any thing that disturbs a healthy system is to be avoided as inexpedient, if not dangerous. The cold bath, or shower bath, and moderate exercise in the open air, are advantageous in strengthening the constitution, and in lessening the liability to the epidemic influence. The tepid bath in persons of debilitated habits would be better than the cold. People that are well, ought to take no medicines as preventives. Good health is a better preventive than all the articles in the Materia Medica. When the tongue becomes white, and the digestion disturbed, patients should take no medicine, nor make any great change in diet or regimen, without the advice of some skilful physician.

For the last six weeks my brother and myself have prescribed for from thirty

to fifty patients daily, five-sixths of whom were affected with some modification of the prevailing epidemic. Out of this number, eleven have died of cholera. Three of them were in a state of collapse before we were called; three were cases of relapse from exposure and error in diet; and one occurred in a person of debilitated constitution. In the remaining cases, though called in before the stage of collapse took place, our efforts proved unavailing in preventing a fatal termination. I mention these facts, not for the purpose of showing that our success has been at all extraordinary, but for the purpose of showing in how large a proportion of cases the disease is manageable, if taken in time.

If the public at large were duly impressed with the importance of attending to early symptoms, this fell scourge might be stripped of its terrors. I believe that the *white tongue*, to which I have endeavoured to draw your attention, gives the earliest intimation of a tendency to this formidable disease; and as it exists for a considerable length of time before an attack, the patient has sufficient warning of its approach.

The epidemic is here, I trust, somewhat on the decline. Up to this time, there have been nearly 1000 cases reported, and upwards of 350 deaths: but this constitutes but a small part of the whole number who have suffered from *cholerine*, or the disease in its milder form.

I hope these remarks may prove satisfactory to you on the several heads on which you have requested my opinion.

Albany, August 23d, 1832.

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Post Mortem Appearances in Cholera.—The fourth No. of our cotemporary, the *Medical Magazine*, contains some interesting observations on the cholera of Vienna, by Dr. Charles T. Jackson, of Massachusetts; from which we extract the following account of the post mortem appearances exhibited in that disease. The dissections, Dr. Jackson remarks, "were made with due care and with great minuteness. There is a professorship of pathological anatomy at Vienna ably filled by Dr. Wagner. His sole duty consists in examining the dead and reporting exactly the state of the bodies submitted to his inspection. He does not attend the sick, and consequently could not be influenced by any bias in his pathology. I made a great number of dissections with this professor, and shall always remember the skill, talent, and minute accuracy for which this accomplished anatomist is remarkable; as well as the gentlemanly urbanity of the professor's manners, and the kindness with which he received foreign physicians. The Germans are remarkable for the methodical arrangement of their studies. I observed this peculiarity in the manner in which they make their dissections. They examine the body before them as naturalists would a new species, and note every peculiarity observable. They begin always with the surface of the body; examine every little eruption that may exist on the skin, note the precise thickness of the adipose tissue, the state of the muscles, &c. The digestive organs come next; and they are as closely examined from the mouth to the anus. Then come the organs of circulation and those of respiration, and lastly, the brain and nervous system, which they examine with special care, always opening the spinal canals and disclosing the whole extent of the medulla. The mazes of the solar plexus are likewise threaded, and the exact state of the ganglions described. This precision gives often a tedious length to the reports, but is exceedingly precious to the student of morbid anatomy. I shall endeavour to lay before you, as briefly as possible, the general results of our dissections of the choleric subjects. The surface of the body is always remarkable, as we can distinguish a person dead of this disease at a glance, from the state of the skin and muscles.

"When we examine a corpse dead of cholera, we remark a livid purple or blue colour of the skin over the whole surface of the body, but more strongly marked at the extremities; the skin of the fingers on the palmar face is wrinkled, and the tips of the fingers and toes have deep furrows within, produced by this means. The eyes are deeply sunken, and have a dark bluish black ring around the orbits. The conjunctiva is congested with blood, and

has a glassy lustre—the flexor muscles are rigidly contracted, the tendons standing out prominent on the extremities; the hands are firmly clenched, requiring an effort to open them. Tongue covered with a brown slimy coat; mucous membrane of the mouth covered with an adhesive mucus—uvula, tonsils and pharynx covered with granulations, as is likewise the base of the tongue. These granulations vary in size from that of a pepper-corn to that of a pea, and are probably the mucous follicles altered by inflammation. They contain a yellow pus of more than ordinary consistence. Œsophagus corrugated. Mucous membrane of the stomach, often thickened, and is of a delicate pink colour, or is brownish-yellow, with spots of redness, as if from recent inflammation. These red spots have often little rounded vesicles of the shape and size of half a pea, projecting from the centre, these contain a liquid pus. We noticed the presence of vesicles in three instances in the stomach, where we first discovered them. Afterwards we found them very common in the whole track of the small intestines, but did not find them so frequently in the stomach. These vesicles are probably mucous follicles altered by inflammatory action. Stomach and intestines are filled with a turbid liquid like rice water, with little flocculi of a white membranous substance floating in it. The fluid in the intestines is coloured more or less by fæcal matter and bile.

"The glands of Peyer are enlarged in cases where the disease has been protracted into the typhoid state. The glands of Brunner are often in these cases rendered visible, as large as pepper-corns and have black points at their centres. Valvulæ conniventes of the duodenum flaccid, thickened and swollen—covered with the little vesicles before mentioned—more rarely they are ulcerated. Peritoneum dry, adhesive to the touch, and has a shining opaline lustre. The bile ducts are often thickened, but are generally open. Liver dry; gall-bladder filled with a brownish liquid bile. Spleen small, flaccid. Heart large, flaccid, soft, easily torn by the fingers—contains blood in all its cavities. The blood is imperfectly coagulated, resembling thick molasses. It adheres to the surface of the heart and gives it a dark colour. The blood is black, or venous blood in both ventricles and auricles. The *pulmonary veins contain clots of yellow coagulated lymph*, tremulous like *jelly*. Mr. Wagner considers this a peculiar phenomenon. The state of the blood is like that I have observed in persons dead of diabetes mellitus. Is it not the effect of a drain of serum from the blood during the vomiting in cholera, and by urine in diabetes?

"In the organs of respiration we find the trachea containing frothy mucus of a brown colour. Vocal cords of the larynx flaccid, sometimes thickened. Mucous membrane of larynx sometimes red and congested. Lungs somewhat contracted in volume, are tough and leathery to the feel, but *crepitate well* and *never contain tubercles*. Kidneys have the veins full of uncoagulated blood. Bladder firmly contracted in a small mass beneath the pubes. It is generally empty, or contains a drachm of opaque liquid. Brain has the sinuses engorged with uncoagulated black blood. The cerebral mass firm, tough and dry. In cases where the disease was of a long duration before death, we found the brain congested. This was peculiar to the typhoid state. Medulla oblongata firmer than ordinary, and contracted in volume. Medulla spinalis congested with blood from gravitation after death. Semilunar ganglion was found sometimes enlarged, of a deep red colour, and sometimes softer than natural; the state of this ganglion, however, varied so much that I can give no precise account of its morbid anatomy. It is obvious the changes of colour in this ganglion might have been the effects of the change in the colour of the blood. But little is known of the morbid anatomy of the ganglionic nerves, and we have no data on which to found our comparisons—hence it is difficult to say what part their lesion might have performed in the cholera.

"We examined twenty or thirty corpses of persons dead of cholera during my stay in Vienna, and the above morbid appearances are generalized from the whole number. I have carefully compared the facts with those collected by my friends at Vienna, and find that we are generally of accord."

Cholera Statistics of Philadelphia.—The following tables exhibit a very interesting view of the progress of the disease, and the localities in which the cases occurred. We are indebted for it to Mr. Samuel Hazard, in whose valuable publication, the Pennsylvania Register, it first appeared.

SUMMARY REPORT.

	Private practice.		Hospitals.		Almshouse.		Arch street prison.		Total.	
Date.	New cases.	Deaths.	New cases.	Deaths.	New cases.	Deaths.	New cases.	Deaths.	New cases.	Deaths.
July 11	1	1	0	0	0	0	0	0	1	1
12	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0
16	5	3	0	0	0	0	0	0	5	3
17	1	0	0	0	0	0	0	0	1	0
18	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0
24	1	1	0	0	0	0	0	0	1	1
25	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0
27	0	0	2	2	0	0	0	0	2	2
28	1	1	5	4	0	0	0	0	6	5
29	4	0	1	0	1	1	0	0	6	1
30	9	3	5	3	0	0	1	1	15	7
31	5	2	9	5	5	2	0	0	19	9
Aug. 1	16	5	4	2	1	1	0	0	21	8
2	8	3	14	9	5	2	13	1	40	15
3	13	4	13	5	5	1	4	4	35	14
4	27	4	9	8	0	0	9	1	45	13
5	26	10	28	10	11	6	*	*	65	26
6	29	10	86	24	16	11	45	26	176	71
7	78	26	38	32	17	8	3	7	136	73
8	43	7	35	20	35	18	1	1	114	46
9	94	26	35	24	24	7	1	1	154	58
10	83	12	45	21	14	4	0	1	142	†39
Total.	444	118	329	169	134	61	77	43	984	392

* No report.

† Including four cases and one death in Pennsylvania Hospital.

SUMMARY REPORT.—*(Continued.)*

Date.	Private practice.		Hospitals.		Almshouse.		Arch street prison.		Total.	
	New cases.	Deaths.	New cases.	Deaths.	New cases.	Deaths.	New cases.	Deaths.	New cases.	Deaths.
Total to Aug. 10	444	118	329	169	134	61	77	43	984	392
11	76	14	41	†13	8	3	‡1	3	126	33
12	66	12	*39	15	5	4	0	0	110	31
13	94	24	28	18	8	7	0	0	130	49
14	70	12	33	17	5	8	3	0	111	37
15	36	6	32	14	4	3	1	0	73	23
16	62	14	§31	15	1	1	0	0	94	30
17	49	11	36	13	0	1	0	0	‖90	26
18	53	11	21	7	0	0	0	0	74	18
19	20	5	25	6	4	0	0	0	49	11
20	31	7	22	9	1	0	0	0	54	18
21	27	4	24	3	0	0	0	0	51	9
22	20	4	26	4	2	1	0	0	49	9
23	11	4	20	6	0	2	0	0	33	10
24	21	4	26	5	1	1	0	0	48	10
25	16	5	7	5	1	0	0	0	24	10
26	7	1	23	5	0	0	0	0	30	6
27	5	1	16	6	0	0	0	0	21	7
28	5	0	11	2	0	0	0	0	16	2
29	7	2	13	2	0	0	0	0	20	4
30	8	2	12	1	0	0	0	0	20	3
31	10	3	13	2	0	0	0	0	23	5
Sept. 1	5	2	13	1	0	0	0	0	18	3
2	1	0	4	0	0	0	1	0	6	0
3	6	2	5	1	0	0	0	0	11	3
4	5	1	7	0	0	0	0	0	12	1
5	4	0	3	1	0	0	0	0	7	1
6	6	1	5	0	0	0	0	0	11	1
7	1	0	1	0	0	0	0	0	2	0
8	2	0	0	0	0	0	0	0	2	0
9	0	0	0	0	0	0	0	0	0	0
10	2	0	2	0	0	0	0	0	4	0
11	3	0	1	2	0	0	0	0	4	2
12	2	0	4	0	0	0	0	0	6	0
13	0	0	1	0	0	0	0	0	1	0
Total.	1175	270	874	342	174	92	86	46	2314	754

* One case, and one death in Walnut Street Prison.
† One death in Pennsylvania Hospital.
‡ One case do. do.
§ One case do. do.
‖ Including five new cases and one death at the marine barracks.

Table showing where the Cases of Private Practice occurred.

Date.	Kens.	N. L.	P. T.	City.	South.	Moya.	W. Phil.	Total.
July 11	0	0	0	1	0	0	0	1
16	0	4	0	0	1	0	0	5
17	0	0	0	0	1	0	0	1
24	1	0	0	0	0	0	0	1
27	0	0	0	0	1	0	0	1
28	0	0	0	0	1	0	0	1
29	0	1	0	2	0	1	0	4
30	2	3	0	0	0	3	0	8
31	0	4	0	0	0	1	0	5
1	3	3	0	2	3	5	0	16
2	0	4	0	1	1	2	0	8
August 3	4	2	0	2	2	2	1	13
4	9	8	1	6	3	0	0	27
5	6	7	0	7	4	2	0	26
6	2	5	1	11	3	7	0	29
7	4	15	1	37	7	14	0	78
8	2	9	4	17	2	9	0	43
9	6	9	2	34	24	19	0	94
10	4	5	1	32	25	16	0	83
11	3	10	2	29	16	15	0	76*
12	7	5	3	27	12	12	0	66
13	8	8	4	29	24	21	0	94
14	8	4	5	22	19	9	2	70*
15	4	0	6	13	7	5	1	36
16	5	6	0	24	17	10	0	62
17	0	2	6	24	9	7	0	49†
18	1	3	2	24	13	9	1	53
19	3	3	1	6	4	3	0	20
20	6	3	1	9	10	1	1	31
21	1	4	0	11	4	7	0	27
22	1	3	1	9	3	3	0	20
23	1	2	0	3	3	2	0‡	11
24	6	4	1	6	3	1	0	21
25	3	0	0	3	8	2	0	16
26	3	0	1	1	1	1	0	7
27	1	0	0	1	3	0	0	5
28	0	0	1	0	4	0	0	5
29	0	0	3	2	0	2	0	7
30	2	1	3	1	0	2	0	8
31	1	1	1	3	3	1	0	10
Sept. 1	1	3	0	1	0	0	0	5
2	1	0	0	0	0	0	0	1
3	0	0	2	1	2	1	0	6
4	0	0	0	0	3	2	0	5
5	0	2	0	2	0	0	0	4
6	0	0	0	3	3	0	0	6
7	0	0	1	0	0	0	0	1
8	1	0	1	0	0	0	0	2
9	0	0	0	0	0	0	0	0
10	0	1	1	0	0	0	0	2
11	1	0	0	0	2	0	0	3
12	0	0	0	1	0	1	0	2
13	0	0	0	0	0	0	0	0
Total.	111	144	55	407	251	198	6	1175

* Including one case in Passyunk. † Residence of one case not given. ‡ Two cases in Passyunk.

Mortality of the Cholera at Quebec.—The resident population of Quebec is estimated at 27,000, and it is supposed that during the prevalence of the epidemic that the passenger population was 10,000, making a total of 37,000, of whom, up to the 3d of September, 2218 died of cholera.

The following table shows the interments and actual deaths from cholera at Quebec, from the 8th of June, (the day on which the malady first appeared,) to the 2d of September, inclusive. It is taken from the registers kept by the clergy.

June	9	6		July	23	8
	10	7			24	9
	11	29			25	12
	12	27			26	7
	13	70			27	6
	14	92			28	9
	15	143			29	10
	16	120			30	10
	17	97			31	8
	18	112		Aug.	1	8
	19	117			2	9
	20	122			3	9
	21	70			4	5
	22	78			5	17
	23	34			6	8
	24	33			7	10
	25	49			8	4
	26	40			9	11
	27	31			10	19
	28	21			11	11
	29	38			12	18
	30	33			13	23
July	1	31			14	10
	2	21			15	16
	3	25			16	27
	4	17			17	22
	5	24			18	33
	6	18			19	26
	7	10			20	23
	8	9			21	13
	9	14			22	17
	10	15			23	16
	11	7			24	7
	12	12			25	8
	13	11			26	16
	14	8			27	24
	15	8			28	11
	16	8			29	11
	17	8			30	13
	18	7			31	11
	19	11		Sept.	1	13
	20	6			2	15
	21	8				
	22	7				
Carried over		1654		Total		2218

Table showing the Progress of Cholera at New York.

July.	Cases at dwelling houses.	Hospitals.	Bellevue.	Yorkville and Harlem.	Total of cases.	Deaths at dwelling houses.	Hospitals.	Bellevue.	Yorkville and Harlem.	Total of deaths.	Deaths as reported by the city Inspector.
4th	7				7	4				4	
5th	15	3			18	10	2			12	
6th	11	13			24	8	7			15	
7th	42	13	30*		85	6	6	13*		25	
8th	29	13			42	10	11			21	
9th	18	30	57†		105	4	10	14†		28	
10th	44	22	43		109	6	13	25		44	
11th	45	31	53		129	10	15	25		50	
12th	32	39	48		119	10	16	25		51	
13th	27	39	35		101	10	22	17		49	
14th	43	43	29		115	15	29	22		66	
15th	60	53	20		133	28	31	15		74	
16th	92	50	21		163	45	32	17		94	
17th	60	63	23		146	19	29	12		60	
18th	65	59	14		138	22	36	14		72	
19th	114	76	11		202	42	28	12		82	
20th	132	66	28		226	48	42	10		100	992‡
21st	191	100	20		311	61	33	10		104	116
22d	154	76	9	2	241	50	35	5	1	91	152
23d	163	42	26		231	46	17	20		83	108
24th	188	51	22	35	296	57	22	7	10	96	106
25th	99	45	10	3	157	21	32	5	3	61	110
26th	75	48	14	4	141	23	21	7	4	55	73
27th	73	46	3	0	122	23	18	5		46	63
28th	93	49	1	2	145	37	26	4	1	68	70
29th	61	58	1	2	122	19	15	3	3	40	85
30th	62	35	3	3	103	14	19	3	3	39	47
31st	59	52	1	9	121	23	20	3	2	48	53
Aug. 1st	47	39	4	2	92	13	24	3	1	41	53
2d	47	24	0	10	81	14	17	0	3	34	56
3d	48	36	1	5	90	14	8	1	1	24	38
4th	48	35	3	2	88	17	11	2	0	30	54
5th	57	38	0	1	96	21	8	0	0	29	39
6th	60	38	0	3	101	21	15	0	1	37	51
7th	57	31	0	1	89	19	12	0	1	32	28
8th	50	32	0	0	82	12	9	0	0	21	55
9th	47	26	0	0	73	18	10	0	0	28	34
10th	60	34	0	3	97	18	7	0	1	26	26
11th	33	41	0	2	76	18	15	0	0	33	47
12th	32	33	0	2	67	9	12	0	2	23	34
Total.	2640	1618	530	91	4877	865	735	299	37	1936	2490

* These include all in Bellevue Hospital from the 27th of June to the 7th of July.
† These include all in Bellevue on the 8th and 9th.
‡ Total to the 20th of July inclusive.

(Table continued.)

August.	Cases at dwelling houses.	Hospitals.	Bellevue.	Yorkville and Harlem.	Total of cases.	Deaths at dwelling houses.	Hospitals.	Bellevue.	Yorkville and Harlem.	Total of deaths.	Deaths as reported by the city Inspector.
Total to Aug. 12	2640	1618	530	91	4877	865	735	299	37	1936	2490
13th	63	41	0	1	105	16	6	0	1	23	36
14th	18	24	0	0	42	8	7	0	0	15	33
15th	33	29	0	13	75	14	8	0	4	26	27
16th	39	37	0	3	79	14	11	0	1	26	34
17th	28	25	1	9	63	11	8	1	1	21	32
18th	38	32	0	6	76	6	10	0	3	19	26
19th	28	27	1	1	57	9	9	0	0	18	25
20th	27	31	0	0	58	6	7	0	0	13	39
21st	24	20	0	8	52	8	6	0	4	18	16
22d	28	18	2	0	48	15	5	2	0	22	22
23d	31	36	0	5	72	17	7	0	4	28	31
24th	18	17	1	9	45	8	9	1	2	20	30
25th	20	17	0	0	37	5	9	0	0	14	16
26th	30	15	0	5	50	13	9	0	1	23	24
27th	29	9	1	1	40	12	1	0	0	13	38
28th	23	17	0	1	41	9	1	0	0	10	15
Total.	3117	2018	536	153	5814	1036	848	303	58	2245	2935

Note from Dr. Lee *relative to the original suggester of the use of Frictions with Mercurial Ointment, Camphor, and Capsicum in Cholera.*—Sir,—I have observed in the last number of your Journal, a letter addressed by me to Dr. L. A. Smith, of New Jersey, in relation to the external treatment of collapsed cases of cholera, by the use of frictions of mercurial ointment, camphor and capsicum. Lest it should be inferred from the language there employed, that I laid claim to the credit of the above-mentioned remedy, (such not having been my intention,) it is due to Dr. S. C. Roe, principal physician of the Greenwich Hospital, to state, that he introduced the remedy into that institution, and that it was employed by myself, as his assistant, under his direction. CHAS. A. LEE.

To Dr. Hays.

New York, Sept. 23d, 1832.

Herpetology of South Carolina and Georgia.—John Edwards Holbrook, M. D., Professor of Anatomy in the Medical College of South Carolina, Member of the Royal Medical Society of Edinburgh, Corresponding Member of the Academy of Natural Sciences of Philadelphia, is preparing for publication, "Herpetology of South Carolina and Georgia, or a description of the reptiles found in those states." The work will be completed in four numbers, quarto, of two hundred pages each, embracing full descriptions of the organization, habits, and localities of these animals.

Each number will contain twenty or thirty handsomely coloured engravings, from original drawings, by T. Sera.

Terms $ 8 per No.; a number to be published yearly, oftener if practicable.

We have for several years known Professor Holbrook, as one of our most

zealous and accomplished naturalists, and we hail with joy this announciation of his disposition to illustrate one of the most interesting departments of zoology. Brought up in the school of Cuvier, and devoted subsequently, with untiring assiduity, to the study of the organization and habits of the reptiles of the south, we know of no individual in this country better qualified for the execution of the task which he has undertaken. There is perhaps no region of country, within the whole circle of the American continent, so rich in the different varieties of reptiles as Carolina and Georgia, and as we know, from personal observation, that many of the species are entirely unknown to naturalists, we feel assured that every lover of natural history will rejoice at having this opportunity afforded him of acquiring information relative to a class of animals so infinitely diversified in their characters and so highly interesting in their habits.

We have had an opportunity of examining most of the beautifully coloured drawings from which the engravings are to be made, and we have no hesitation in saying, that in point of tasteful design and correctness of execution, they will bear a creditable comparison with any productions we have seen in the same department of the arts. E. G.

—

Human Physiology, Illustrated by Numerous Engravings. By Robley Dunglison, M. D., &c. Philadelphia. Carey & Lea, 1832. 2 Vols. 8vo. pp. 526 and 581.—We have much pleasure in announcing the appearance of this work, which will add to the already high reputation of the author. It is the most complete and satisfactory system of physiology in the English language. We shall have the pleasure of pointing out its particular merits in our next No.

—

Complete Treatise on Human Anatomy. By Dr. Bourgery, with plates, lithographed from Nature, by N. H. Jacob. Translated from the French, by John W. Francis.—M. A. Delaunay, of New York, proposes to publish this work, to the merit of which strong testimony is borne by competent judges. We have seen a few livraisons of the original work, and can testify to the beauty of the plates, and to the distinctness with which the different parts are represented. When we shall have an opportunity of examining the American edition we shall notice it more particularly.

We must take this opportunity of again recommending to our readers the coloured Illustrations of Human Anatomy, by Professor Sœmig, and the Anatomical Atlas of Dr. Weber, published by Mr. Schloss, of London. If the concluding Nos. of these works are equal to the 1st Nos. they may be pronounced to be unsurpassed for accuracy and cheapness.

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Bouisson's Treatise on Fevers.—This work, of which we have already expressed our favourable opinion, (see Vol. VII.) has appeared in an English dress. The profession are indebted for the translation to Dr. J. R. Knox. It should be in the library of every physician.

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A Manual of Surgery, Founded on the Principles and Practice lately taught by Sir Astley Cooper and Joshua Hanny Green, Esq. Edited by Thomas Castle, F. L. S.—The fact of this work having gone through three editions in England, may be considered as sufficient evidence of its merits. It has been recently republished by Messrs. Monroe and Francis, of Boston, and C. S. Francis, of New York. The reprint is from the last London edition, which has been considerably enlarged, and contains many additional notes from the writings of various distinguished surgeons.

THE

AMERICAN JOURNAL

OF THE

MEDICAL SCIENCES.

ART. I. *Personal Observations and Experience of Epidemic or Malignant Cholera in the City of Philadelphia.* By SAMUEL JACKSON, M. D. Assistant to the Professor of the Institutes and Practice of Medicine and Clinical Practice in the University of Pennsylvania. [With two plates.]

HAD the numerous publications made since the occurrence of malignant cholera in its epidemic character been successful in establishing fixed principles in regard to its pathology or treatment, it would be unnecessary to swell the vast catalogue by new additions. Unfortunately this desirable result appears yet far distant, and it may be doubted whether any very close approximations have even been attained. While these important questions remain undetermined, while they continue to be the subjects of controversy, it is the duty of those who are favoured with extensive opportunities of observation, to continue to offer, in a candid spirit, unprejudiced statements of their experience and investigations on this formidable yet obscure disease.

The following observations hastily thrown together, are the results of my own personal experience, investigations and reflexions on the cholera as it has presented itself to me in this city, where it has so lately prevailed as an epidemic, in Montreal in the latter end of June and beginning of July, and in New York. The facts may be relied on, and may serve for others to form their own conclusions. The inductions I draw from those facts are my mode of understanding them—my method of viewing them, and are influenced by the anatomical and physiological principles I entertain—or the doctrines I have formed of the animal organization. They may be true—they may be false. Time, observation, experience are the tests to which they are submitted. Having no other object but truth in view, they